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REVIEWS.

Ordnance Survey of the County of Londonderry. Lieut.-Col. Colby, of the Royal Engineers, Superintendent.—[Unpublished, but submitted to the British Association by command of His Excellency the Lord Lieutenant of Ireland.] 4to.

One hundred copies of this Survey were struck off previously to final revision, for the purpose of being laid before the British Association on its meeting in Dublin. Every section and every member was invited to offer suggestions for the perfecting of the work; but it appeared to be the general opinion, that all that could be desired had been anticipated; and the sections separately, and the Association collectively, passed votes of thanks to the Lord Lieutenant, by whose command copies had been laid before them, and expressed a hope that a work of such great national importance would be continued with the same spirit that it had been commenced.

Few of our readers are probably aware of the minute accuracy with which the survey of Ireland is conducted. At first it was intended that the ordnance maps should contain only the general divisions of the country into parishes, townlands, &c.; but when, in consequence of a change in the Grand Jury laws, it became necessary to value the lands subject to county cess, it was deemed expedient to ascertain the exact limits of estates and farms, the quality of the soil, its natural productiveness, and how far it had been improved by cultivation. These examinations suggested to the intelligent officers intrusted with the duty, that an accurate statistical survey, co-extensive with the trigonometrical survey, might be made at a very trifling additional expense: the plan received the sanction of Government, and the volume before us contains the first portion of the result.

To understand the care that has been taken to ensure accuracy, it would be necessary to visit the Ordnance Office in the Phœnix Park, Dublin, and investigate the complicated intellectual machinery, by which the detached observations of those employed in the survey are collected and reduced. We use the word "machinery," because no other could express the regularity with which the minute division of labour in the several departments is preserved, the strict limitation of every person engaged to his own peculiar branch of business, and the steady union of all in producing a harmonious result.

One advantage resulting from this national work, eloquently described by Mr. Babbage at the Dublin Meeting, is too important to be omitted. The Ordnance Survey, as at present conducted, is a national school that annually supplies the three kingdoms with a body of civil engineers, trained under the best masters, instructed in the best practice, as well as the best theory of their profession. Nor is this a mere speculation; it is a fact that many of the most rising engineers employed on the rail-roads now in progress, were trained in the trigonometrical survey of Ireland.

The portion of the survey before us is confined to the parish of Templemore, which includes the important city of Londonderry: it is divided into three sections; 1. The natural features and natural history of the parish —2. Its artificial state, including its ancient and modern history, descriptions of the principal buildings, social statistics, &c.—3. Its general state, including its social and productive economy.

We shall first direct our attention to the geology and zoology of the district, a portion contributed by Captain Portlock, secretary to the Geological Society of Dublin. The most important contribution to geological science derived from the survey of Templemore, is some new facts illustrating the growth of bogs and peat-mosses. It is necessary that we should first quote the account of the general phenomena of the growth of bog:—

"A shallow pool induced and favoured the vegetation of aquatic plants, which gradually crept in from the borders towards the deeper centre. Mud accumulated round their roots and stalks, and a spongy semi-fluid mass was thus formed, well fitted for the growth of moss, which now, especially *sphagnum*, began to luxuriate. This absorbing a large quantity of water, and continuing to shoot out new plants above, while the old were decaying, rotting, and compressing into a solid substance below, gradually replaced the water by a mass of vegetable matter. In this manner the marsh might be filled up, while the central, or moister portion, continuing to excite a more rapid growth of the moss, it would be gradually raised above the edges, until the whole surface had attained an elevation, sufficient to discharge the surface water by existing channels of drainage, and calculated by its slope to facilitate their passage, when a limit would be in some degree set to its further increase. Springs existing under the bog, or in its immediate vicinity, might indeed still favour its growth, though in a decreasing ratio; and here—if the water proceeding from them were so obstructed as to accumulate at its base, and to keep it in a rotten, fluid state—the surface of the bog might be ultimately so raised, and its continuity below so totally destroyed, as to cause it to flow over the retaining obstacle, and flood the adjacent country."

In Templemore, and some other parts of Ireland, the remarkable fact has been observed, that successive layers of trees or stumps have been observed, in the erect position, and furnished with all their roots, at distinctly different levels, and at a small vertical distance from each other.

"Reverting now to the preceding remarks, it appears that the consolidation of the lower portion of the turf was a necessary preparation for the first growth of timber, and—considering the huge size of the roots thrown out by these trees, and the extent of space over which they spread —the mode is readily perceived, by which they obtained a basis of support sufficiently firm and extensive to uphold their rising and increasing stems. The first layer of turf was now matted by the roots, and covered by the trunks of the first growth of timber; but, as the bog still continued to vegetate, and to accumulate round the growing stem, a new layer of turf was created to support a second growth of timber, the roots of which passed over those of the preceding, and so on with a third, or more, until at length the singular spectacle was exhibited of several stages of trees growing at the same time. Such seems a natural way of viewing the subject; but it is often stated that one stump is found actually on the top of another, which would imply that the lower tree had been destroyed before the turf had ascended to the level of the broken stump. In such an instance, using Mr. Griffith's example of the rate of increase of recent bog, and supposing it compressed by growth into one-fifth of its original bulk, little more than one hundred years would have elapsed between the two periods."

From the section on Zoology we extract the following facts respecting salmon:—

"Mr. Daniells, long employed as a clerk on the Foyle Fishery, has collected much valuable information on the habits of this fish. From numerous experiments he ascertained that the male salmon was the sole labourer in the arduous operation of forming the spawning trough. Of many taken for trial the males were found with snouts scratched almost to bleeding, and with bellies and sides nearly denuded of scales by the violent rubbing they had undergone, while the females bore no mark of injury. The sharpened form of the snout in the male salmon, as well as in the male of the sea trout, is consistent with this theory; and the peculiar condition of the female, laden with spawn, affords a satisfactory reason why such should be the law of nature. It excuses, likewise, the apparent apathy, with which in some sheltered pool she awaits the return of the male, whom she then accompanies to the prepared furrow, that they may together deposit their milt and roe. The great disproportion in number between the males and females, taken in the nets, has also been noticed by Mr. Daniells—the males perhaps not exceeding in number one-third of the females—but it is probable that this arises from a partial separation of the sexes in the ascent of the river, the males keeping the central, and more rapid part of the stream."

The greater part of the second section, and particularly the ancient and modern history of Londonderry, has been prepared by Mr. George Petrie, whose merits as an artist and antiquarian are well known. It is illustrated by four plans of the city of Londonderry, the first taken in the reign of Queen Elizabeth, before it was burned and destroyed by Sir Cahir O'Dogherty; the second shows the state of the town after its restoration, under the direction of Thomas Raven, a London engineer, and is copied from his original drawing preserved in the MS. library of Trin. Coll. Dub.; the third is from an old plan made in 1788, and the fourth shows its present condition.

Mr. Petrie has completed the ancient history of Derry, from the Lives of the Saints, the Annals of the Four Masters, and other original documents, many of which escaped the notice of former antiquarians. Most of these

notices are meagre, but still they afford information respecting the progress of society, and the origin of the family names still to be found in the district. Before the arrival of the English, it appears, that when an Irish prelate intended to raise an expensive edifice, it was usual to make a visitation to different parts of the diocese, for the purpose of getting contributions. In 1149, Derry-Columbkille, that is, the church erected at Derry in honour of the Irish Saint, Columbkille, was burned, and some curious particulars are recorded of the means taken for its restoration :—

"The visitation of Kinel Owen was made by Flahertach O'Brolchain, *coarb* [successor] of Columbkille, and he received a horse from every nobleman, a cow from every two victuallers, a cow from every three freemen, and one from every four of the common people. He received from Maurice Mac Loughlin, king of Ireland, 20 cows, a gold ring weighing 5 ounces, and his own horse and dress.

"Flahertach O'Brolchain, *coarb* of Columbkille, made a visitation throughout Siol Cathasaigh [O'Casey's country], and received a horse from every nobleman, and a sheep from every dwelling house. He also received from Cuuladh [Cooley] O'Flynn, the lord of the territory, his own horse and a gold ring weighing two ounces.

"Flahertach O'Brolchain, *coarb* of Columbkille, made a visitation throughout Iveagh [in the county of Down], and received a horse from every nobleman, a sheep from every dwelling house, a scruple and five cows from O'Donslevy [Donlevy] lord of the territory, and an ounce of gold from his wife."

From these notices it appears, that vassalage prevailed in Ireland, for the freemen are distinguished from the peasants, and that coined money was unknown in Ulster before the English invasion; facts inconsistent with the high state of civilization attributed to the ancient Irish by dreaming antiquarians.

The following extract presents a curious picture of the social and religious state of the country :—

"Niall O'Gormly, lord of Moy Iha and Kinel Enda, was slain by Donough O'Caireallain, and the clan Dermot, in the middle of Derry-Columbkille. They first burned the house in which he was, and Niall, in endeavouring to escape, was killed in the door-way of the house. Donough O'Caireallain then made his perfect peace with God, with Saint Columbkille, and with the clergy of Derry, for himself and his posterity, and he promised his own gifts, and those of his sons and posterity for ever, to Saint Columbkille and the clergy of Derry. He also made over to them a townland in the parish of Donaghmore, and delivered up to them the most valuable goblet at that time in Ireland, as a pledge for a gift of sixty cows. There was also a house erected for the clerk in lieu of that of O'Gormly, which had been burned, and he [O'Caireallain] made reparation for all damage caused by the burning. The clan Dermot also gave full satisfaction for their part of the damage."

It is not necessary to trace the history of Derry under the English government; it possessed but little importance, until the reign of James II., when its heroic defence against that monarch was the principal cause of his final overthrow.

The social statistics of Derry are minutely set forth under the various heads of Municipality, Education, Benevolence, and Justice. Under the second head, there is a list of the periodical publications now circulating in the city, which, though no very sound test of its intellectual state, affords probably the nearest available approximation to a standard of comparison.

Under the head of Benevolence, we find the following institution, which we think has an injurious tendency :—

"*Poor Shop.*—The poor shop was instituted in 1821. It is supported from subscriptions, which average from 50*l.* to 60*l.* annually. Its object is to provide all poor applicants with clothes and bedding at prime cost, on condition of their giving security, and paying for them weekly, at the rate of 1*d.* in the shilling. Shoes are sold every Tuesday, and other clothing every alternate Tuesday. Instalments are received every Friday from 11 till 2. The management is vested in a committee of ladies.

"This institution has tended to promote habits of punctuality, honesty, industry, and independence. The expenses of management (including loss by defaulters, office rent, &c.) being only from 20*l.* to 25*l.* annually; the capital is always on the increase, so that the mere interest will perhaps in time cover the expenses. When the security fails to cover a loss by default, the original capital becomes liable to it."

It is always bad for a charitable society to become a joint-stock trading company; in the first place, it injures the petty retailers, it exposes every agent employed to corrupt influence, and it does not foster habits of independence and industry. The subject is discussed in our report of Mr. Babbage's paper on co-operative shops (see *Athenæum*, p. 649).

The statistical reports on Justice, &c. have been prepared by Lieutenant Larcom, who was also intrusted with the general superintendence of the work, on the system of classification recommended by M. Guerry. The general results of the tables are important to statisticians; but it must be observed, that the tables have been formed from the returns of a single year, in a very small county.

Among the antiquities of the parish, is the Grianan of Ely, one of the most ancient and historically interesting monuments remaining in Ireland. Some of those antiquarians, who prefer the vague guidance of etymology, or hazardous guess, to careful research, declared that this was an ancient temple of the Sun; but Mr. Petrie has demonstrated, from ancient Irish authority, that this Cyclopic structure is the palace of the Northern Kings, and has translated an extract from the Irish topographical work, probably the earliest treatise of the kind in Europe, where it is fully described. The topographical poem, though very curious, could scarcely be rendered intelligible to the English reader, without a lengthened commentary. In the course of the discussion of this subject, Mr. Petrie refers to his Prize Essays on the Military Architecture of Ireland, and the Round Towers, in which he has proved from native authorities, that the latter are ecclesiastical structures, and of course erected since the introduction of Christianity into Ireland; we trust, that the publication of these essays will not be delayed much longer, for they are among the most important contributions that have yet been made towards explaining ancient Irish historical monuments.

The chapter on productive economy, has been contributed by Capt. Portlock. The tables contain the most minute information, and the system of classification adopted has been unanimously approved of by the Statistical section of the British Association, at its late meeting in Dublin. The basis of the system is thus described by its author :—

"To secure the full advantage of this investigation, it is necessary to keep constantly in view the important principle, that application of external power to production, whether it be exhibited in mere manual labour, aided by implements of husbandry, or in the more compound state in which it is developed in manufactures, is still a form of the same thing. And further, that the term *manufactory* implies not a work distinct from primary productions, but one either auxiliary or supplementary to it, so that the manufacture of woollen goods is still a part of the agricultural system, being supplementary to the breeding of sheep; the manufacture of linen to the culture of flax; the manufacture of cotton goods to that of cotton, in the same manner as the operations of the corn mill are supplementary to the growth of oats, barley, and wheat; a principle sound in itself, and calculated to remove those obscurities and prejudices which at present perplex the inquirer, in his estimate of the relative importance of agriculture and manufactures, which he has been accustomed to consider two distinct things, and not as they really are, parts of the same."

The heads under which the information is given, deserve to be quoted, as a guide to those who may engage in similar inquiries :

"Townland; estates, proprietor, tenant, tenure, acreage.

"Aspect; general, exposed to what winds, sheltered from what winds.

"Level; highest, lowest, average.

"Surface; soil and sub-soil. Porportion of bog and waste ground.

"Supply of water; rivers, brooks, lakes, springs.

"Farms; Manures and Fuel, kind and distance. Communications, kind and quality. Markets, distance in miles.

"State of Drainage. Order of crops. Quantity of seed and produce.

"Plantation. Live stock, distinguishing the several kinds.

"Amount of direct labour in farming operations, number, age, sex of persons employed—what length of time each employed.

"Amount of auxiliary power, simple and compound.

"Primary and secondary manufactures.

"Professions. Manufacturing trades. Trades of distribution."

We have quoted sufficiently from this volume to prove its great value; it is, indeed, the most complete statistical survey that has yet appeared, and if the remainder of the work be executed with the same diligence and accuracy, of which there is little reason to doubt, Ireland will possess a record of its resources unparalleled in Europe, and the conductors of the Ordnance Survey will, in the strong words of Mr. Babbage, "have earned a right to the lasting gratitude of their countrymen, as national benefactors."

The Life of Admiral Viscount Exmouth. By Edward Osler, Esq. London: Smith, Elder & Co.

Here is a valuable addition to our Naval biography: a book not to be read by Englishmen without pride of heart. The name of Exmouth occupies an honourable place beside those of Nelson and Collingwood: his services were hardly less numerous or brilliant than theirs. A genuine British sailor, fearless almost to fool-hardiness, whether to preserve human life, or to maintain the honour of the national stan-

dard; a strict disciplinarian, though a kind friend to those under his command; a man courteous to his enemies, whom the chances of victory made his prisoners; with scarcely a thought or interest which had not its "home upon the deep," shows bright and distinct in the biography we are about to examine in company with our readers. We are told, in the preface, that it has been undertaken with the sanction of the hero's only surviving brother, and that the personal history it contains is chiefly derived from Lord Exmouth's own correspondence. Mr. Osler has executed his task satisfactorily, though, for our own tastes, we would have sacrificed something of conciseness of narrative for the sake of giving more of the letters in their original state. Small points of character are illustrated in the course of familiar correspondence, even by such minutiæ as peculiar forms of expression, which a biographer cannot transplant into his more systematically written pages: but in the full and judicious display of these lies precisely the difference between a shadowy sketch, and a finished *coloured* picture. We knew the worth of Collingwood as a commander by the gazettes of the day, and the naval chronicles since collected; but we did not love him as a man, till his affectionate, manly, simple letters were laid before the public.

Though Lord Exmouth was one of those, the rise of whose fortunes might have given occasion to the old saying, "that it is better to make a name than to inherit one," his family was of some mark and respectability. His ancestors had, for some generations, been settled in Cornwall, and were many of them remarkable for their loyalty; his father, indeed, was manifestly one of the old school, for "it was his practice to make his children drink the King's health on their knees every Sunday after dinner." He died in 1765, and, three years afterwards, Mrs. Pellew's second marriage threw her four sons on the world, to fight their own way. Lord Exmouth, the second son, was at this time eleven years old. He must have been born, we think, with some mark of "the service" upon him, for his feats of bravery as a boy clearly pointed out his destination. While yet a school-boy, he (nobody else daring to venture) went into a house on fire, in which was a considerable quantity of gunpowder, and brought it out in safety.

In 1780 he entered the Navy in the *Juno*, Capt. Stott, and followed the same captain to the *Alarm*, but, standing by a comrade in a quarrel with the captain and his mistress, he was discharged. It is a fine trait in his character, that, ten years afterwards, he took an orphan son of this same Capt. Stott under his peculiar protection. He got home to England, (the scene of his disgrace was Marseilles,) and we presently find him at sea again, under the better auspices of Captain Pownoll of the *Blonde*, an officer to whose judicious discipline it is probable that he owed much of his future success. In these days, he could hardly have been very manageable, as will be seen by the following anecdote:—

"In the spring of 1775, General Burgoyne took his passage to America in the *Blonde*, and when he came alongside, the yards were manned to receive him. Looking up, he was surprised to see a midshipman on the yard-arm standing on his head. Captain Pownoll, who was at his side, soon quieted his apprehensions, by assuring him that it was only one of the usual frolics of young Pellew, and that the General might make himself quite at ease for his safety, for that if he should fall, he would only go under the ship's bottom, and come up on the other side. What on this occasion was probably spoken but in jest, was afterwards more than realized; for he actually sprang from the fore-yard of the *Blonde*, while she was going fast through the water, and saved a man who had fallen overboard."

Our business is rather with the personal character than the professional life of our hero; we shall, therefore, choose for extract such traits of feeling and disposition as are most likely to interest the general reader. It will be sufficient to allude to the share which the *Blonde* took in the early American war. A detachment of men was sent from her, as well as from the other King's ships at Quebec, across Lake Champlain, to build the ships in which the English were to meet the enemy, and cut off all communication between the United States and Canada: in this service young Pellew was included, at his own earnest entreaty. The flotilla was completed in an incredibly short space of time, and on the 11th of October the enemy was discovered and attacked by the new-made force; and in this affair our hero distinguished himself—throwing himself upon "a death service," and securing the *Carleton's* tow-rope, while exposed to the heavy fire of the enemy. This gallant feat was rewarded by his first promotion—he was appointed to the command of the schooner in question: Lord Sandwich, too, wrote to him, promising him the rank of a lieutenant when he returned to England. A few pages further, we find him in hot pursuit of Arnold, who had ventured upon the lake in a boat, and was so nearly caught that he left his *stock and buckle in Mr. Pellew's hand*—relics still preserved by the family. The next service, out of the common way, here recorded, is, his making a bridge across the Mohawk, over which our army crossed to Saratoga. In the action of Ticonderoga, which was followed by the retreat of our forces, he again signalized himself, so as to gain the thanks of Burgoyne; and soon afterwards, at Fort George, to be called to sit in council with the generals as commander of the brigade of seamen—all this when he was only twenty years of age! The last honour which fell to him from this American campaign was, his being sent to England with dispatches, and strong recommendation from Sir Guy Carleton to Lord Sandwich. He was forthwith appointed to the *Licorne*, on the Newfoundland station. On her return to England he joined his old friend and commander, Captain Pownoll, in the *Apollo*. The latter died in his arms, being shot through the body in an action with the French frigate, *Stanislaus*, which they encountered while cruising in the North Sea; his last words were—"Pellew, I know you won't give His Majesty's ship away." We wish we could find room for the letter he addressed to Lord Sandwich, in which this action is minutely described, and his own previous claims to notice stated with frank, but not presumptuous confidence. These claims were recognized by his being made commander in the *Hazard*. When she was paid off, he commissioned the *Pelican*, a French prize—a mere shell of a vessel—"so low, indeed," to use his own phrase, "that his servant could dress his hair from the deck, while he sat in the cabin." But in this sloop he took a French privateer *on the first day of his first cruise*, and acquired so much honour by a spirited attack on three similar vessels, that he was again rewarded, by being named post-captain to the *Suffolk*—thus, literally fighting up his way from one honour to another; but it was his nature. "Confound the fellow!" exclaimed Captain Macbride, an old family friend, on the occasion of some dispute, "if he had been bred a cobbler, he would have been the first in the village."

During the ensuing peace he married, and for a while lived a more quiet life than he had hitherto done—chasing smugglers, in his brother's armed lugger, by way of pastime. In 1786 he commissioned for the Newfoundland station; and a most interesting letter is given from an officer, who served under him as a midshipman, in which we find that both by precept and example he encouraged his crew in activity and enterprise, keeping them constantly employed in exploring the coast, and teaching his men how to perform their duties in times of emergency, by bearing a part in them himself. Of his generous disregard of self we have many anecdotes. We must make room for one. He was on the point of stepping into his barge, on the King's birth-day, to go on shore to dinner; the crew had been permitted to bathe.

"The gambols and antics of the men in the water caught his attention, and he stepped on one of the guns to look at them; when a lad, a servant to one of the officers, who was standing on the ship's side near to him, said, 'I'll have a good swim by-and-by, too.' 'The sooner the better,' said the captain, and tipped him into the water. He saw in an instant that the lad could not swim, and quick as thought he dashed overboard in his full dress uniform, with a rope in one hand, which he made fast to the lad, who was soon on board again, without any injury, though a little frightened, but which did not prevent his soon enjoying the ludicrous finish of the captain's frolic."

When the *Winchelsea* was paid off, he joined the *Salisbury* on the same station, where he remained till the year 1791, when he came home, and, partly by way of occupation, partly in the vain hope of filling his purse, took up farming; but in this he was unsuccessful; there were too few hair-breadth 'scapes in the routine of sowing and reaping to content one so restless as himself; and his country neighbours shook their heads at his failures as an agriculturist, while they believed him born to good luck, from the happy omen of a swarm of bees making a comb for many successive years in the porch of the house where he lived. About this time he was offered a command in the Russian army, which he declined.

He had not, however, very long to wait for occupation. On the unforeseen breaking out of the war with France, in the year 1793, glad to have done with his crops and furrows, he offered his services to the Admiralty, and was immediately appointed to the *Nymphe*, a 36-gun frigate; in default of more experienced hands, he manned her with a crew of Cornish miners, and was thenceforth in active service. The *Nymphe's* first great action was with the French frigate *Cleopatre*, which she captured in fine style. Here is his own account of the affair.

"Dear Sam—Here we are—thank God! safe—after a glorious action with la Cleopatre, the

crack ship of France; 40 guns, 28 on her main-deck, and 12 on her quarter-deck, some of 36 pounds, and 320 men. We dished her up in fifty minutes, boarded, and struck her colours. We have suffered much, but I was long determined to make a short affair of it. We conversed before we fired a shot, and then, God knows, hot enough it was, as you will see by the inclosed. I might have wrote for a month, had I entered on the description of every gallant action, but we were all in it, heart and soul. I owe much to Israel, who undertook with the after-gun to cut off her rudder and wheel. The tiller was shot away, and four men were killed at her wheel, which I verily believe was owing to him. I will write again in a day or two, and do all I can for every body. We must go into harbour. Cleopatra is fifteen feet longer, and three feet wider than Nymphe—much larger. Poor dear Pearse is numbered with the slain—Plane and Norway slightly wounded—old Nicolls safe. God be praised for his mercy to myself, and Israel, and all of us!

"Yours, ever, E. P."

"Be kind to Susan—go over, and comfort her; I cannot write to poor Pearse's mother for my life—do send her a note; I really cannot. I loved him, poor fellow, and he deserved it."

The captain of the French frigate was killed. An anecdote of his devoted zeal for his country deserves to be recorded.

"A cannon-shot struck him on the back, and carried away great part of his left hip. Even at that dreadful moment, he felt the importance of destroying the signals which he carried in his pocket; but in his dying agony, he took out his commission in mistake, and expired in the act of devouring it;—a trait of devoted heroism never surpassed by any officer of any nation."

The *Cleopatre*, it may be remarked, was the first frigate taken in the French war. The action, too, has an interest, as being the first in which a ship had substituted carronades for quarter-deck guns of small calibre, making them a material part of her force. It was on this occasion that Captain Pellew was knighted, and most graciously received at Court. His next ship was the *Arethusa* (who has forgotten the brave old sea song which bears her name?). He now proposed the scheme of forming an independent cruising squadron, to check the depredations of the French frigates in the channel:—his plans were adopted, and he joined Sir John Warren, giving him most efficient support in an affair off the Isle of Bass. But success, indeed, seemed his portion, or rather the reward of his devotion and energy. When the French fleet came out of Brest harbour, in the December of the same year, he was alive to the consequence of the measure, and, in one and the same moment, as it seemed, had taken all necessary precautions, and put himself in communication with the Admiralty.

"When Sir Edward made his communication to the Admiralty, Earl Spencer observed, that the first step was to send advices without delay to the admirals at Plymouth and Portsmouth. 'That,' replied Sir Edward, 'has been already attended to. I sent despatches from Exeter and Salisbury.' 'Then, sir,' said a junior Lord, apparently with displeasure, 'you have left nothing for the Admiralty to do.'—'Except,' interposed Lord Spencer, 'to get the British fleet to sea with as little delay as possible.'"

Sir Edward Pellew was at once dispatched to reconnoitre Brest; and on his return from this service, exchanged the *Arethusa* for the *Indefatigable*, a clumsy unmanageable frigate, which he materially improved by judicious alterations. While cruising off Cape Finisterre in her he had a narrow escape from shipwreck; the *Indefatigable* sprung a leak, and was obliged to put into Lisbon to repair. Here is an anecdote characteristic of the man, told by one of his officers.

"On the evening of our arrival, the English consul sent on board a number of Portuguese, to relieve the crew. Early next morning, (having the morning watch,) I observed all these people leave the pumps. It was a saint's day, and they would not work. I ran into the captain's cabin to state the circumstance; he in a moment came out in his dressing-gown, with a drawn sword, chased the Portuguese round the gangways and forecastle, made them to a man lay in at the pumps, and kept them at it till the pumps sucked."

And this is followed by one still more so: we are told, that in "order to ascertain whether both sides of the ship had been injured, he resolved to examine the bottom himself; and, to the astonishment and admiration of everybody who witnessed this heroic act, he plunged into the water, thoroughly examined both sides, and satisfied himself that the starboard side alone had been damaged." We cannot resist a few pithy words which we find on the next page, relative to another feat of bravery, in which he had nearly perished. "This is the third time, within the present year, that Sir Edward had risked his life to save others"; and immediately afterwards follows the narrative of a shipwrecked vessel, (the *Dutton*,) whose crew entirely owed their preservation to his courage and presence of mind. For this last good deed, he was created a baronet, and received "for an honourable augmentation to his arms a stranded ship for a crest," as well as honours and freedoms from more than one provincial town. We must be brief with Sir Edward's further achievements on board the *Indefatigable*, though we cannot pass a tribute to his rapidly extending fame, paid to him by a prisoner, Capt. Bergeret, whose ship, the *Virginie*, he fought and captured.

"A boat was sent from the Indefatigable for the gallant prisoner, who was deeply affected at his misfortune, and wept bitterly. He inquired to whom he had struck; and being told, Sir Edward Pellew, 'Oh!' he exclaimed, 'that is the most fortunate man that ever lived! He takes everything, and now he has taken the finest frigate in France.'"

For the account of the watching of Brest, and our hero's skilful manœuvres when tracing the course of the enemy's fleet, we must refer our readers to the book before us. Nor can we make room for an account of the affair between the *Indefatigable* and *Amazon* frigates, and the *Droits de l'Homme*, terminating with the fearful shipwreck of the latter. But one anecdote, relating to the subsequent capture of *La Vaillante*, we must record:—

"Among the passengers on board La Vaillante were the wife and family of a banished deputy, M. Rovère, who had obtained permission to join him, and were going out with all they possessed, amounting to 3000*l*. Sir Edward restored to her the whole of it, and paid from his own purse the proportion which was the prize of his crew."

In the next chapter we have some account of Sir Edward Pellew's discipline on board his ship, which, as might be supposed, was at once firm and indulgent. His resolution was called into full play in the next ship to which he was appointed—the *Impetueux*: going on board her for the first time, he was accosted at the gangway by the boatswain:—

"I am very glad, sir, that you are come to us, for you are just the captain we want. You have the finest ship in the navy, and a crew of smart sailors, but a set of the greatest scoundrels that ever went to sea."

The mutinous spirit on board the *Impetueux* smouldered for some time before it broke out:—

"On Thursday, the 30th of May, at noon, Sir Edward, being engaged to dine with Sir Alan Gardner, had gone to dress in his cabin, leaving orders with the officer of the watch to call all hands at the usual time, one watch to clear the hause, and the other two to wash decks. When the order was given, it was obeyed by all the marines, but by scarce any of the sailors. Very shortly after, signal was made to unmoor, upon which a noise of 'No—no—no,' was heard from the main-hatchway, and the seamen came pressing forward in great numbers; those in the rear crying, 'Go on—go on!' The first lieutenant, Ross, and Lieutenant Stokes, the officer of the watch, demanded what was the matter; and, after some murmuring, were told that there was a letter. The officers asked for it, that it might be given to the captain, but the cry of 'No—no—no!' was immediately renewed. Lieutenant Ross then desired Lieutenant Stokes to inform the captain, upon which the mutineers shouted, 'One, and all—one, and all!' Sir Edward instantly ran out in his dressing-gown, and found between two and three hundred on the quarter deck. On his appearance, the clamour was increased, mingled with cries of 'A boat—a boat!' He asked what was the matter, and was told they had a letter to send to Lord Bridport, complaining of tyranny, and hard usage. He demanded the letter, declaring that he would immediately carry it himself, or send an officer with it to the Admiral; but all cried out, 'No, no—a boat of our own!' He persisted in his endeavours to pacify them as long as a hope remained of bringing them to reason, intreating them not to forfeit their character by such shameful conduct. But when some of the ringleaders declared with oaths that they *would* have a boat, and would take one, he quietly said, 'You will, will you,'—gave a brief order to Captain Boys, of the marines, and sprang to the cabin for his sword. The marines, who had previously withstood every attempt of the conspirators to seduce them from their duty, now displayed that unwavering loyalty, and prompt obedience, for which, in the most trying circumstances, this valuable force has always been distinguished. Sir Edward returned instantly, determined to put to death one or more of the ringleaders on the spot, but the evident irresolution of the mutineers spared him the necessity. He immediately ordered the quarter-deck to be cleared, the marines to be posted on the after-part of the forecastle, and the fore-part of the quarter-deck and poop, and the sentries to be doubled. The carpenter, in the meantime, ran to Sir Edward's cabin, and brought swords for the officers, who, at the first alarm, had hastened to place themselves by their captain's side. The mutineers, after a moment's hesitation, ran off the quarter-deck, and threw themselves down the hatchways, exclaiming, to put out all lights, and remove the ladders. The officers followed them closely, and soon secured the ringleaders. Sir Edward himself seized one of the most violent, and threatening him with instant death if he resisted, dragged him up from below to the quarter-deck. The letter, an unsigned one, was now given up, and the ship's company returned quietly to their duty."

We must add the closing scene of the drama:—

"When the time arrived for executing the mutineers, it was found that preparations had been made to give to their fate the appearance of a triumph. For it strongly marks the general

feeling in the navy, during this unhappy period, that the individuals who thus suffered, were regarded rather as martyrs than criminals. Encouraged to hardihood by his mistaken shipmates, generally excited by spirits, and sometimes even decorated with knots of ribbon, the mutineer went boldly to execution, leaving the spectators less appalled at his fate than admiring his fearless bearing. Sir Edward quickly changed this feeling when the prisoners came up to the forecastle. Addressing a few words, first to the men who had followed him from the Indefatigable, and afterwards to the rest of the crew, 'Indefatigables,' he said, 'stand aside! not one of you shall touch the rope. But you, who have encouraged your shipmates to the crime by which they have forfeited their lives, it shall be your punishment to hang them!' Quailing before their commander, their false feeling was destroyed in a moment; and as there is no medium between the hardihood and the cowardice of guilt, they felt as he intended, and many of them wept aloud. Afterwards, there was not in the service a more orderly ship than the Impetueux, or a crew more pleasant to command."

Every subsequent page bears some trace of his activity, or record of achievement. While with the channel fleet under Lord Bridport and Sir Alan Gardner, Pellew was sent with seven sail of the line to land five thousand troops at Quiberon Bay. He earnestly proposed an immediate attack on Belleisle, but was overruled in this by General Maitland, who knew the resources of the place better than himself. After a few other changes of station, the *Impetueux* was paid off at the end of the war, and Sir Edward Pellew, by the naval promotion of 1801, was made a colonel of the marines. In the subsequent year he was returned as representative of Barnstaple; but St. Stephen's was not his element, and early in 1803 he was again on the water in the *Tonnant*, in which he joined the Channel fleet. Here, as a specimen of his tactics, may be mentioned his advertising for a superior schoolmaster, "to whom he offered 50*l.* per annum, in addition to his pay, that he might obtain for his young officers better instruction than the regulations of the service would afford." In the following year he was recalled, to confer with the Admiralty on the disputed points in the administration of the navy, then before Parliament: he gave his vote in support of the Admiralty. In the April of the same year he was made Rear-Admiral of the White, and appointed commander-in-chief in India: he hoisted his flag in the *Culloden*. In this situation he was placed in unpleasant collision with Sir Thomas Trowbridge, owing to the sudden changes of ministry and measures which succeeded his appointment. This was but a short time before that gallant officer's untimely death, which was caused, as will be remembered, by his insisting on crossing to the Cape in the *Blenheim*, a ship not seaworthy. While in India, Sir Edward Pellew's old antagonist, Bergeret, was again brought before him as prisoner: their meeting on the quarter-deck of the *Culloden* is described as being almost affecting. Adhering to our resolution of only noticing such services as also bring before us traits of the man, we must pass over the remainder of the time passed by him in the East. He arrived in England again in the autumn of 1809, a few days too late to be appointed to the naval command of the expedition to the Scheldt. In the spring of 1810 he hoisted his flag on board the *Christian VII.*, as commander-in-chief of the North Sea; and a year afterwards, succeeded Sir Charles Cotton as commander-in-chief in the Mediterranean, an appointment of the utmost importance; but he met his duties like a man, as a letter of his, dated on the subsequent New Year's day, shows.

"I never expect to live the war through, and am not at all anxious about it. If I can only have the happiness of doing service to the country, I would give a great deal to be ten years younger; but as that cannot be, I must content myself with the reflection that my children are good, and provided for; and that I leave them attached to their mother, and to each other. We have all reason to be thankful, and to praise God for his great and manifold mercies. We are ready to start at a moment's notice, and have a strict lookout. The enemy are also ready, sixteen sail, a three-decker of 140 guns launched Christmas day.

"God bless you, and yours; and may He enable me to do honour to my country and my family—for myself, I care not."

Here, too, we must refer to the volume for a detail of his sea services. At the end of the war he was created Baron Exmouth—as he tells us in another fragment of one of his letters, to his own surprise. The last and most important achievement of his life, was the affair of Algiers; and we are briefer in our mention of this than of other of his less glorious achievements, because it cannot be forgotten by our readers; the tale of the cruelties of that place, and its bombardment, has been carried to the remotest corners of our island, by the wretched creatures escaped from captivity, who found an inheritance and a welcome in their maimed bodies, and gained many a noon's meal and night's lodging, by exalting the glory and gallantry of the hero of Algiers. But we must give his own account of the affair—less marvellous than theirs, it is true, but still interesting.

"It has pleased God to give me again the opportunity of writing you, and it has also pleased Him to give success to our efforts against these hordes of barbarians. I never, however, saw any set of men more obstinate at their guns, and it was superior fire only that could keep them back. To be sure, nothing could stand before the Queen Charlotte's broadside. Everything fell before it; and the Swedish consul assures me we killed above five hundred at the very first fire, from the crowded way in which the troops were drawn up, four deep above the gun boats, which were also full of men. I had myself beckoned to many around the guns close to us, to move away, previous to giving the order to fire; and I believe they are within bounds, when they state their loss at seven thousand men. Our old friend John Gaze was as steady as a rock; and it was a glorious sight to see the Charlotte take her anchorage, and to see her flag towering on high, when she appeared to be in the flames of the Mole itself; and never was a ship nearer burnt; it almost scorched me off the poop; we were obliged to haul in the ensign, or it would have caught fire. Everybody behaved uncommonly well. Admiral Milne came on board at two o'clock in the morning, and kissed my hand fifty times before the people, as did the Dutch Admiral, Von Capellan. I was but slightly touched in thigh, face, and fingers—my glass cut in my hand, and the skirts of my coat torn off by a large shot; but as I bled a good deal, it looked as if I was badly hurt, and it was gratifying to see and hear how it was received even in the cockpit, which was then pretty full. My thigh is not quite skinned over, but I am perfectly well, and hope to reach Portsmouth by the 10th of October. Ferdinand has sent me a diamond star. Wise behaved most nobly, and took up a line-of-battle ship's station;—but all behaved nobly. I never saw such enthusiasm in all my service. Not a wretch shrunk anywhere; and I assure you it was a very arduous task, but I had formed a very correct judgment of all I saw, and was confident, if supported, I should succeed. I could not wait for an off-shore wind to attack; the season was too far advanced, and the land-winds become light and calmy. I was forced to attack at once with a lee-shore, or perhaps wait a week for a precarious wind along shore; and I was quite sure I should have a breeze off the land about one or two in the morning, and equally sure we could hold out that time. Blessed be God! it came, and a dreadful night with it of thunder, lightning, and rain, as heavy as I ever saw. Several ships had expended all their powder, and been supplied from the brigs. I had latterly husbanded, and only fired when they fired on us; and we expended 350 barrels, and 5,420 shot, weighing above 65 tons of iron. Such a state of ruin of fortifications and houses was never seen, and it is the opinion of all the consuls, that two hours more fire would have levelled the town; the walls are all so cracked. Even the aqueducts were broken up, and the people famishing for water. The sea-defences, to be made effective, must be rebuilt from the foundation. The fire all round the Mole looked like Pandemonium. I never saw anything so grand and so terrific, for I was not on velvet, for fear they would drive on board us. The copper-bottoms floated full of fiery hot charcoal, and were red hot above the surface, so that we could not hook on our fire-grapnels to put the boats on, and could do nothing but push fire-booms, and spring the ship off by our warps, as occasion required."

And here we must leave this work, neither criticising its style, nor searching into its authorities, but contenting ourselves with tracing the career of a very extraordinary man. The secret of his success was once well and laconically stated by himself, in acknowledging the compliment of having his health drunk at a public dinner.

"He referred to his own history, as a proof that no officer, however unsupported by influence, need despair of receiving his due reward from the justice and gratitude of his country. 'I have never known,' he said, 'what fortune meant. I never chose my station, and never had a friend but the King's pennant; but I have always gone where I was sent, and done what I was ordered; and he who will act upon the same principles, may do as I have done.'"

A Treatise on Pulmonary Consumption, &c. By James Clark, M.D. F.R.S. London: Sherwood & Co.

In a former number of this Journal we entered very fully into a popular consideration of the malady which is treated of in the present volume.† We there pointed out the interest which the subject possesses for the public at large,—especially for that portion of it which is known to be exposed to the causes of the disease; and we described, as minutely as the nature of the question and our own limits permitted, the organic changes which constitute that form of pulmonary disease, which is termed Phthisis or Consumption.

The rapid progress which medical science has made during the last fifty years, has thrown immense light on the history and pathology of all those maladies which are known, and have been described, under the terms scrofula, tuberculous disease, and con-

† See Athenæum, No. 334.

sumption; and more correct views, and a more rational practice, have been the natural results. It is now, indeed, admitted, that consumption is not a *local* disease, referable, as the old physicians imagined, to a local cause; but that the disease of the lungs is truly a secondary affection, depending on a *pre-existing* constitutional disorder, which gives rise to the formation of tubercles on the application of certain exciting causes. To this morbid condition of the system, whether hereditary or acquired—whether distinguished by the appellation of "latent scrofula," or by the popular term "delicacy of constitution," Dr. Clark has given the name of *Tuberculous cachexia;* and he contends, that until a perfect knowledge of this constitutional disorder is acquired, both by the profession and the public,—until the talents and labours of the physician are applied to correct it, with the view of preventing the occurrence, or of arresting the progress, of tuberculous disease,—no essential advantage can be made in diminishing the frequency or mortality of consumption, although the public may continue to be the dupes of boasting quackery and unprincipled pretenders.

This is the great first principle of the work before us; and when we consider the enormous destruction of human life by the extensive class of tuberculous diseases, it is, we are convinced, of the highest consequence to call the public attention to the important fact, that it is only during this pre-existing condition of the system that medical art can hope to accomplish much, either towards prevention or cure.

"In the long catalogue of human infirmities, (says Dr. Clark,) tuberculous diseases are undoubtedly the most deserving the study of the physician, whether we regard their frequency or mortality. Confined to no country, age, sex, or condition of life, they destroy a larger proportion of mankind in temperate climates than all other chronic diseases taken together. In this country, and over the whole temperate region of Europe and America, tuberculous disease of the lungs causes probably a fifth-part of the whole mortality; and in some districts, and even in whole countries, the proportion is much larger. It has been calculated by the late Dr. Young, Dr. Woollcombe, and others, from the best data which the bills of mortality afford, that in Great Britain and Ireland, consumption causes one fourth-part of the deaths that occur from disease. If we add to consumption, tuberculous disease of the glandular and nervous systems, of the large joints, of the spinal column, &c. and deduct the mortality which occurs during the first months of life, I shall probably be within the truth in stating that a third-part of the mortality of this country arises from tuberculous diseases: if to this frightful destruction of mankind we add the numerous crippled and disfigured sufferers whom we daily meet with, and couple these results with the painful reflection that the predisposition to tuberculous diseases is transmitted from the parent to the offspring, it will surely be unnecessary to press upon medical practitioners the claim which this class of diseases, above all others, has upon their earnest consideration."

After these facts, it is lamentable to reflect that tuberculous cachexia is much more generally hereditary than acquired;—in the former case, Dr. Clark states, there are peculiarities in the modification of the whole organization, in structure and in form, in action and in function, by which it is characterized; and even when acquired after maturity, the countenance alone supplies too true an indication of the condition of the sufferer, and bespeaks with terrible certainty the deeply-rooted constitutional disease. If this period be allowed to pass by without the aid of art to prevent or ward off the threatened mischief, consumption, in one or other of its forms, is soon established, and runs through its several stages with more or less rapidity, until death puts an end to the multiplied miseries of the patient.

After describing the ordinary form of consumption and its marked varieties, Dr. C. enters upon the consideration of the particular symptoms and physical signs of the disease; the morbid anatomy then brings him to the process adopted by nature in those cases of cure which have been established by subsequent examination, and to the description of the diseases which attend and complicate phthisis in its progress. The chapter on the Statistical History of Consumption contains many curious facts, and is accompanied by several valuable tables, affording much matter of interesting reflection to the political philosopher. It appears that more than one-fourth of those who die from birth to puberty are affected with tuberculous disease; that the greatest number of deaths from consumption occur between the age of twenty and thirty; the next in proportion between thirty and forty; the next between forty and fifty; and the next either between fifteen and twenty, between fifty and sixty, or even above sixty; the mortality being probably at its maximum at thirty, and gradually diminishing from that age.

In the section on the Influence of Climate in producing Consumption, it appears that excessive heat is a powerful cause of the disease; and that the Malays and Negroes are much more subject to it than Europeans, when exposed to the same causes. The mortality from consumption among the troops of the British army "is greater in the West Indies," says Dr. Clark, "than (at) any other station, and least at the Cape of Good Hope and the East Indies." We find also, that "in every thousand deaths among the whites, one hundred and twenty, or little more than one-eighth, are from pulmonic diseases; while in every thousand deaths among the blacks, 472, or nearly one-half, are caused by pulmonic diseases.

The chapter on the history of the disease in animals affords much interesting information, and proves that the lion, the dromedary, and many other orders of the mammalia, both carnivorous and herbivorous, as well as various birds, reptiles, and even insects, have been found to die consumptive. It also appears that this disease has long caused a great mortality among the monkeys in the Jardin des Plantes; and that nearly all the monkeys in our menageries die tuberculous. In the gardens of the Zoological Society in Regent's Park, Mr. Owen has found the disease in the tiger, the Persian lynx, the paradoxure gennet, the civet cat, the Indian ichneumon, the brown coati mondi, the Nepâl bear of the Himalayas, the American tapir, the American elk, in various monkeys, in the Eskimaux dog, and in the lungs of the Python tigris. In all these animals, the morbid appearances presented on examination "bear," says Dr. Clark, "a close analogy to those observed in man."

In the chapter on the Causes of Consumption, the hereditary origin of the disease is fully proved: "It is," says our author, "a fact not to be controverted; indeed I regard it as one of the best-established points in the etiology of the disease." But he also makes us acquainted with the serious truth, that there are many diseases which entail consumption upon the offspring; and if the parent labours under habitual dyspepsia or general ill-health, whatever be its nature or its cause, the effect of that unhealthy state is manifested in the strong predisposition of the children to consumptive diseases; "in short, a deteriorated state of health in the parent from any cause, to a degree sufficient to produce a state of cachexia, may give rise to the scrofulous constitution in the offspring." We regard this as one of the most important facts which this work contains; we may say, indeed, that it is more generally applicable to the public than any other principle which the author lays down; and it is, as he states, "highly deserving attentive consideration." The principal causes of tuberculous cachexia in persons who do not inherit the predisposition to it, are treated under the heads of improper diet, impure air, deficient exercise, abuse of spirituous liquors, and affections of the mind; the three first of which Dr. C. considers the most important and effectual.

"Were I to select (he says) two circumstances which influence the health, especially during the growth of the body, more than any others, and concerning which the public generally, at present most ignorant of them, ought to be well informed, they would be the proper adaptation of food to difference of age and constitution, and the constant supply of pure air for respiration. Deficient exercise ranks next as a cause of tuberculous disease. If a due supply of proper food and pure air are necessary to nutrition, bodily exercise is scarcely less so to ensure the proper growth and developement of the body. The amount of exercise necessary to produce this effect, and to maintain a healthy state of the system, will vary according to the age and the constitution of the individual; but without exercise we have abundant proof that there cannot be sound health, more particularly in early life."

Dr. Clark adds his testimony to the multiplied miseries entailed upon society by the abuse of spirituous liquors, and shows how frequently consumption is its consequence.

The last division of this treatise comprises the Prevention and Treatment of Consumption: the chapter on its prevention is likely to be more immediately interesting to the public, than the more strictly professional portions which precede and follow it. It contains many rules for the prevention of the disease, both as regards parents and their children, and during the periods of infancy, childhood, and youth. These rules are at once judicious, and practically applicable to the present state of society; and we shall be glad to see the public in possession of the valuable principles which Dr. Clark lays down on the subject of physical education. We regret that we cannot spare room for some extracts from this chapter; but we must take our leave of Dr. Clark's Treatise, cordially recommending the work to the public as a clear and practical treatise on a disease which possesses an acknowledged interest for all classes of society, and especially for those who have been compelled to witness the most promising intellect and the

loveliest forms of beauty withering under its fatal influence. When the large and comprehensive views which the author takes of the disease are more fully known, and acted on in practice, we may begin to hope that the mortality from consumption will be less among all ranks; and we are convinced that the public health must improve, if the principles which this work inculcates are received and valued as they deserve.

Chinese Code of Morals—[*Le Livre des Récompenses et Peines, &c.*] Translated by M. Stanislas Julien, for the Oriental Translation Fund. Bentley.

No work possesses a higher reputation and authority in China, than the one before us, said to have been composed in the seventh century before our era, by the philosopher Lao-tsen, the founder of the Tao-ssé, one of the three sects into which the religion of China is divided. The circulation of the work is considered as among the primary duties of religion, and a new edition is undertaken, as an act of piety, by private subscription. Some contribute money, others paper, compositors and printers give their labours, and, after the subscribers are supplied, the remainder of the impression is given among the poor. An edition of the work, which appeared in 1821, a copy of which is in the possession of Professor Julien, contains a list of one hundred and twenty-four persons who contributed to the publication according their usual means. As we occasionally see in the lists of European charitable donations, the subscribers have recorded the motives by which they were instigated, we shall quote a few examples:—

Sie-pong-fei having happily terminated his mother's funeral, subscribes for one hundred and twenty copies, to distribute, as a mark of his gratitude. Tsing-fong and Tsou-té distribute twenty copies to obtain their father's recovery from a dangerous illness. Wou-ing-wen takes ten copies in order to obtain a son, &c.

The edition now translated by Professor Julien, in addition to the precepts of Lao-tsen, contains an elaborate commentary, and two or three anecdotes illustrating every aphorism, showing the advantages that follow from its observance, or the evils that result from its violation. These little fables tend more to illustrate the history, the religion, the morals, the usages, and the literature of China, than any single work that has yet been translated; and we regret that the translation has not been made into English as well as French.

It would be obviously impossible, within the limits of our review, to give anything like a complete analysis of Chinese Ethics; we may, however, observe, that the rewards promised to virtue are for the most part temporal blessings—long life, children, exalted rank; and that the punishments threatened to vice are premature death, sterility, and disappointed ambition. But this is not invariably the case; there are many descriptions of the felicity which the just enjoy in a future state, and pictures of the misery which awaits the wicked, as minute and horrible as any that occur in Ægidius de Columna's tract on the 'Geography of Hell.' The Chinese philosopher, however, apparently believed that men are more likely to be influenced by immediate than remote consequences, and hence he dwells more emphatically on the rewards and punishments of this world, than on those of the future.

In selecting a few of the aphorisms and the anecdotes by which they are illustrated, we shall endeavour to choose such as combine somewhat of general interest with the more striking peculiarities of Chinese life.

The following anecdote is told to enforce the duty of saving our fellow creatures when in danger:—

A traveller proceeding by the banks of a river, perceived at a distance a small boat, which sometimes rose to the top of the waves, sometimes appeared to be engulphed in the waters. There was a man in the stern imploring assistance; the traveller drew out his purse and distributed its contents to some fishermen, to purchase their aid. They succeeded in saving the drowning man, and when they brought him to their generous employer, the traveller recognized his only son.

Many curious anecdotes are related to show the evil effects of calumny and slander. Lao-tsen's rule on the subject is excellent: "Conceal thy neighbour's faults, publish his good deeds."

Passing over many important precepts respecting the social duties which are of universal application, we turn to the anecdote, somewhat similar to the former, illustrating the precept, "Separate not relations who are as closely connected as flesh and bone:"—

When Youen-kong lived in his native province, a rebellion suddenly burst forth which filled all the country with confusion. In his precipitate flight he lost his only son, and when he had reached a distant asylum, he resolved to take a wife of the second rank, in order to procure an heir. It so happened, that a man of the country offered his wife for sale, and Youen-kong purchased her for thirty ounces of silver. Scarcely had she reached his house, when she burst into a passion of tears, and refused to be comforted. He tenderly asked the cause of her grief. "We were reduced to extreme misery," she replied, "and were on the point of perishing with hunger. Seeing that my husband meditated self-destruction, I offered to allow myself to be sold to procure him sustenance. I am thinking on all the kindness he showed me, and on the mutual attachment by which we were united. In one morning the happiness of both has disappeared; he is left in solitude, and I am forced to become the slave of another man. Such, sir, is the cause of the tears you see me shed." Youen-kong was touched with compassion; he conducted her back to her husband, and not only refused to take back the price, but presented them with an hundred ounces of gold to procure the necessaries of life. The re-united pair accepted his gift with tears. They resolved to seek out some young lady fit to become his wife. When they reached the next town, they found some merchants who had a boy to sell. "Since we have not been able to find a girl," said they, "let us purchase this youth and present him to our benefactor." They asked the merchants what price they demanded? It was answered, "An ounce of silver for every year the boy is old." As he was twelve years of age, they instantly bought him for twelve ounces of silver, and conducted him to Youen-kong. Their benefactor received the boy, and, on examining his features attentively, discovered that he was his long-lost child. The father and son flew into each other's arms, and the happiness of the rest of their lives more than atoned for their previous sufferings.

The few examples we have quoted may be taken as a fair specimen of the four hundred legends with which the commentators have illustrated the moral precepts of Lao-tsen; some of them, perhaps, are puerile, some may even be regarded as ridiculous, but there are few which do not bring us acquainted with some Chinese peculiarity, a religious opinion, a custom, or a superstition. M. Stanislas Julien is now without a rival in the path of literature to which he has devoted himself; we trust that he will be encouraged to persevere, and be enabled to accomplish the project he announces, of translating the most celebrated historical works, criminal trials, voyages and travels, dramatic pieces, and popular tales in the Chinese language.

We cannot conclude without noticing an ingenious mechanical contrivance used in preparing the Chinese types for this work. Instead of being engraved, they were made according to a plan invented by M. Girardet for printing maps and charts, to which the Society of Encouragement at Paris gave their first gold medal in 1831, and two thousand francs: the process costs less than one-fifth of the price paid for engraving, and is more accurate. The Chinese characters were drawn on stone by an able artist, the lithographic ink was then covered with a varnish capable of resisting a very powerful acid, which consumed the stone to any required depth. When the characters stood out in sufficiently bold relief, a cast of them was taken in plaster, and thus moulds were formed for casting the types. There is a manifest improvement in the Chinese letters as we advance in the volume, and, if this simple process be applied to producing Oriental characters, we may yet hope to see printed books rivalling the choicest specimens of caligraphy.

ORIGINAL PAPERS

FIFTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

(Concluded from page 666.)

We thought it right, for the information of such subscribers as receive this paper in Monthly Parts, to give, last week, a brief outline of the proceedings in the Mathematical section, but we this day publish the more full reports of our own correspondent. We trust, now that our contemporaries have before them even our abstract of the important business transacted in the Sections, they will be inclined to qualify the censure somewhat hastily passed on the scientific results of the meeting. Their opinions were necessarily formed from the accounts given in the Dublin papers—which papers, naturally perhaps, reported at great length the noble hospitality which has especially characterized their country—leaving science, a more intractable subject, to take care of itself. An exception must be made in favour of *Saunders's News Letter*, to which we have been occasionally indebted for links in the connecting chain of proceedings.

Since our last publication, we have received a letter from Dr. Lardner, from which the following is an extract:—"In alluding to a discussion which took place in the section of the Useful Arts, on the subject of railways, (see p. 654,) my sentiments are put into the mouth of Mr. Vignolles. Now, as, I believe, they are very opposite to Mr. Vignolles's opinion, I suppose he would not be altogether pleased with the paternity of them. It was *I* that maintained '*that slight acclivities are not so injurious as has com-*

monly been supposed.' Mr. Vignolles expressed himself, as I understood him, to dissent from my opinions." Another correspondent informs us that Mr. *George* Rennie, and not Mr. *James* Rennie, was President of the Sub-Section of Mathematics; and Colonel Sykes, and not Dr. Cleland, Vice-President of the Statistical. We have also received a note from Colonel Sykes himself, wherein he observes, "Your correspondent has been pleased to cast a slur on a paper of mine, read in the Physical section on Wednesday," &c. Now, we wish it to be understood, that we had *not*, last week, received our correspondent's reports, and that, with the exception of the abstract of Mr. M'Cullagh's paper, the report of the day's proceedings in that particular section, was, with trifling additions, one of the connecting links for which we were indebted to the Dublin papers. Our own reports will be found in this day's paper. Colonel Sykes adds, "Your correspondent has also omitted to notice a paper of mine, read in the Zoological section, on Tuesday, respecting *the Geographical range* of birds and animals, in which I proved that very many birds and animals of the *same species now* exist, in mean temperatures, in different parts of the world, differing 40° of Fahrenheit. The facts are of importance, as they bear upon the question of the climate inhabited by the animals whose remains are now found in a fossil state." For these and all other errors, whether of omission or commission, we at once express our regret. It should, however, be remembered, that reports so full as those given in the *Athenæum*, of the business transacted in the Sections, were never before attempted, and would have tried, and severely, even the vast resources of our daily contemporaries. To say nothing of the fêtes, feasts, dinners, and after-dinner speeches—or of the more interesting lectures and business transacted at the General Meetings—we had to record the proceedings in *seven* different Sections, working *simultaneously* in *seven* different places. With all means and appliances, it requires no ordinary skill and acquirements to abridge, clearly and accurately, a purely scientific paper. On these occasions the papers were merely read, often under disadvantageous circumstances, and subject to interruption. We mention this, in the hope that hereafter the members will be sufficiently considerate of their own fame and the interests of science, to furnish an abstract of their papers to the gentleman who may be engaged, in the particular section, preparing our reports.

MATHEMATICS AND GENERAL PHYSICS.

[*From our own Correspondent.*]

Wednesday.—Mr. Snow Harris explained his views of the defects of the Proof Plane and Torsion Balance, as used by Coulomb, in his electrical experiments.

Mr. Harris began by giving a sketch of the theory of electricity, most generally admitted at present, commonly known as the French theory. According to this, two fluids pervade all parts of the material creation; when these fluids are united in a certain proportion, they neutralize and disguise each other; and this is the state of the electricities of bodies which we denominate their "natural state"; but when these fluids are separated from each other, the body upon which either of them is accumulated is said to be electrified, and one of these fluids is called the "positive," or "vitreous kind," the other the "negative," or "resinous kind." Each of these possesses properties by which their presence in a separate state is readily detected, and by which they may be easily distinguished. The simplest form of the law according to which their actions, it is said, may be estimated, is this: "Bodies electrified with the same kind of electricities, repel each other with a force proportioned to the inverse square of their distances. Bodies electrified with opposite kinds, attract each other with a force proportioned to the inverse square of the distance." To the mathematical part of this law, Mr. Harris strongly objected, for although some experiments (and these he exhibited to the section,) accorded with the law, yet others were entirely opposed to it; these experiments were of a very simple kind. By his unit measure he ascertained in the several experiments, the quality of electrical charge given to the one body to be exactly the same, and then by a nicely-poised balance, the other body being made to take the place of one scale pan, he determined the amount of the attraction exercised under various circumstances of distance, size, insulation &c. He showed that the law of the inverse square of the distance only held true when the attracted body was not insulated; but when insulated, the law required to take in the quantity and the distance; and, *cæteris paribus*, the law was not then the inverse square of the distance, but the inverse distance itself; this Mr. Harris attributed to the reflex action of the electricity accumulated by induction; an element in the entire effect, which he stated had been most strangely overlooked by the mathematical theorists. He stated, that the results of his experiments on this point were as follows: when you opposed to one surface a smaller surface, the amount of attraction under given circumstances of distance and insulation being determined, and reduced by his method to some denomination of weight, if you then increased the smaller surface, all other circumstances remaining unchanged, the amount of the attraction would increase and attain its maximum when the two surfaces became equal; but if after that you increased the magnitude of the attracted surface to any extent, the amount of attraction would not increase farther; and from this fact he concluded, that the electrical influence did not, as the mathematical theory supposed, radiate in all directions from a centre, but that it only manifested itself in lines parallel to the line which joined the two nearest points of the attracting surfaces. In conformity with this view, he stated, that the attractive influence of two opposed spheres would be precisely the same as the influence of the two nearest hemispheres, and that if you joined by a straight line the two nearest points of the hemispheres, points in this joining line could be assigned, in which, as it were, the entire effect might be considered as residing, or which might be viewed as the centres of attraction; and accordingly, if at the distances of these points, two planes having equal superficial extents as the hemispheres, were placed, the attractive force exerted by these planes would be precisely the same as the attraction of the two spheres, or of the two hemispheres, as he had frequently proved. Mr. Harris next adverted to the commonly received opinions respecting the detention of electrical charges upon the surfaces of bodies, and the distribution of it upon surfaces of various shapes. As to its detention, the ordinary opinion is, that, but for the air which surrounds the body, it would be impossible to confine an electrical charge upon its surface, the electrical particles themselves being highly repulsive, and not being attracted by the particles of matter in the surface of the body; he gave various cogent reasons which compelled him to dissent from this opinion; and, in particular, he stated, that he had succeeded in retaining the electrical charge for some days, upon a brass ball inclosed in a vacuum, so perfect that the air-pump gauge showed the exhaustion to be 299 parts in 300; an electrometer connected with this ball, showed an almost unimpaired degree of divergence for more than 24 hours.

An eminent practical philosopher in London had deemed this experiment of such importance, that he had repeated it with every possible precaution, and had since communicated to Mr. Harris his conviction of its correctness. As to the law of distribution of electrical atmospheres, upon spheres, spheroids, and other shaped bodies, as investigated by Coulomb, Mr. Harris dissented from it. The results, he stated, depended entirely upon the accuracy of the proof plane as a means of determining the relative quantities of electricities on the various parts of the surface of the electrified bodies; now this accuracy, he asserted, that the experiments which he had previously shown to the section entirely disproved, for it appeared, that it was only the power possessed by the several parts of the surface of an electrified body to decompose the natural electricities of the proof plane, that it tested; and this power might be consistent with an equal distribution over the surface, or, indeed, with any law whatever of distribution; the proof plane, therefore, could not afford any test of the true law of distribution, it being obvious, that the decomposing effect depended upon both the quantity of surface that in each case became opposed, as well as upon the nearness or remoteness of the several elements of the opposing surfaces, circumstances which would obviously vary much at the several parts of the surfaces of variously shaped bodies. In one notorious instance, he conceived the use of the proof plane had entirely misled philosophers: from it, they had concluded that the internal surface of a hollow body is entirely devoid of electricity, because a proof plane, when introduced into a hollow electrified sphere, came out without any signs of electrical charge. The following experiment disproved the accuracy of the conclusion. If you fill a glass globe, furnished with a neck, half full of warm mercury, and, setting it in mercury, charge it as you would a Leyden jar; upon pouring out the quicksilver from the inside, every one knew that the glass globe remained strongly charged; yet, the proof plane, being introduced into it, upon being withdrawn manifests no sign of electrical charge whatever. Here then, where we know electricity to exist *within* a hollow body, the proof plane fails to manifest it, and therefore its indication in the case of hollow charged metallic bodies, does not warrant the conclusion, that the electrical charge does not extend itself to the internal surface. Mr. Harris's quantitative experiments led him on this subject to the conclusions, that free electricity was equally distributed over every part of the surface of conducting bodies; that when the quantity of electricity imported was given, the tension was the greatest on a circular-shaped body, least on a plane surface extended like a line; and that equal quantities give equal results with the balance, when distributed upon equal surfaces, whatever be their shapes. In conclusion, Mr. Harris begged to state to the section, a fact which had greatly surprised himself. In charging the large Leyden jar with the unit measure, the quantity which it as it were threw in at the transit of each spark, was precisely the same at the beginning of the process of charging, in the middle, and at the end, and was not, as would at first be imagined, a continually decreasing quantity, as the charge advanced to its completion: this he proved by a very simple experiment, depending for its explanation on the fact, that while a jar charges, as much electricity must pass from the outer coating, as goes to the inner surface; the jar to be charged, being therefore insulated, and a knobbed electrometer attached to the outer coating, the passage of a spark became an index of the quantity of charge received, and it was found that the number of sparks given by the unit measure, to produce one discharge from the outer coating, was the same at all the several parts of the process of charging.

Professor Whewell, after warmly eulogizing the indefatigable industry and the experimental skill of Mr. Harris, and praising the simplicity and accuracy of the instruments invented by Mr. Harris, and by him so successfully used in the

investigation of these very interesting phenomena; trusted that Mr. Harris would not be too easily induced to conclude, that his valuable experimental results were at variance with the received theory. For his part, he felt satisfied, that if the time of the section would permit, he could show, that there was a complete concordance between the experimental and the theory, as far as the variety and complexity of the results placed before the section permitted him to attempt tracing the concordance; but he acknowledged that the theory must be put to the test, whether or not it could accurately explain each and all of the interesting experiments of Mr. Harris; and he admitted, that if it was found insufficient to account for any of these experimental facts, it must at once yield, and be either rejected, or modified to suit the advance of knowledge, which he had no doubt these experiments must on either supposition give rise to. In one only instance would he delay the section, by pointing out the caution with which we should admit these experiments to be adverse to the theory. Newton has shown, that a body placed within a hollow sphere, the parts of which mutually attract the body with forces reciprocally proportioned to the square of the distance, the body would then be between opposite and equal attractions, soliciting it every way, and would therefore be in effect uninfluenced in any direction; on this principle, the proof plane immersed in the charged glass globe should be uninfluenced by any of the equal and opposite attractions, and should therefore come out as it does, without any signs of electricity.

Mr. Harris observed, that if the theory could explain the fact, that the proof plane was not affected by the hollow glass globe, which was known to be electrified, why could it not equally explain its not being affected by the hollow brass globe, without deducing from the fact, that there was no electricity upon the internal surface of the hollow brass sphere?

Captain Sabine then read an abstract of his report upon the researches of Hanstein on the 'Distribution of Terrestrial Magnetism.' He first gave a succinct account of the state in which the famous philosopher had found this important branch of practical science, and the light that his researches had shed upon the subject. Halley, from a careful comparison of all the observations on the magnetic variation and dip, which he could in his day obtain, had concluded that they were inconsistent with the supposition of the earth having only one magnetic axis, and two magnetic poles. In fact, he inferred, that to account with any degree of correctness for ascertained facts, it was necessary to suppose, that two magnetic poles existed in the northern hemisphere of the earth, and similarly, that two other poles existed in the southern hemisphere. He illustrated, by diagrams, the character and positions of the curves of no variation, in the year 1600, and pointed out the diversity of their form in the northern and in the southern hemispheres; and stated, that a comparison of the position of these curves, with the positions of Danish observations made twenty years ago, the German sixteen years since, and the vast mass of observations collected and arranged by the indefatigable industry and skill of Hanstein, showed that these curves have an easterly motion in the northern hemisphere, and a westerly motion in the southern. Conformably with the fact, that the magnetic axis of the earth was not single, is another important fact, viz. that the line of no dip, (or lines of places where a well-balanced magnetic needle would lie horizontally,) is not a great terrestrial circle, but differs most materially from such a circle. Nor is the intensity of the magnetic force by any means equal in similar positions in the two hemispheres; nor is the intensity found to be the same in places where the dip of the needle was the same. The researches of Hanstein on this subject, which is of the utmost importance, nay, almost of vital interest to maritime countries, attracted so much attention, that the government of Russia engaged Hanstein to proceed to Siberia, and there accumulate a sufficient number of accurate experiments, upon the variation, dip, and magnetic intensity. He returned about two years since, and has fully established the fact, that a second north magnetic Pole exists in that neighbourhood. It fortunately happened, that Captain Parry was engaged during the same period, in his researches in the parts of the earth which lie near the other magnetic pole, which exists in the northern hemisphere; and thus a mass of facts has been accumulated, amply sufficient for the examination of the question as regards these two poles; but it is very desirable, that similar simultaneous observations should be made in the neighbourhood of the two poles in the southern hemisphere, which, in the time of Halley, occupied, one a position in Van Diemen's Land, the other in or near Terra del Fuego. Captain Sabine concluded his interesting and lucid abstract, by expressing a hope, that the Association would endeavour to interest the government in this important undertaking. (The Committee agreed to petition government on this subject, see recommendation, p. 642.)

Professor Wheatstone detailed the results obtained by him when attempting to form by the prism a spectrum or coloured image of the spark obtained from an electro-magnetic apparatus, as also the sparks produced under various circumstances from simple galvanic influence, and from an electrical machine. It is well known to almost every person that when a beam of solar light is permitted to pass through a triangular piece of glass called a prism, the light, when received on a distant wall or screen, which if the prism were not there, would paint a round white spot on the screen, depicts an elongated coloured image called a spectrum, the colours of which succeed each other in the following order: the end which is least turned aside by the prism is red, then orange, yellow, green in the middle of the spectrum, blue, violet, and indigo at the end most turned aside. In this spectrum or coloured image the colours succeed each other without any interruption, except that when the prism is very good glass, certain dark bars cross the image at fixed though unequal distances. Mr. Wheatstone examined the light produced by a revolving electro-magnet, expecting to find something of a similar effect, but to his surprise he found that the simple coloured lights that presented themselves were separated by great intervals, in which no light whatever could be seen, and this with such regularity as to afford a test, not only of the substance through the instrumentality of which the light was procured, but also a test of the strict identity of the light produced by galvanism and by electro-magnetism, and to prove that the light of common electricity was essentially distinct from either. When mercury was used as the means of producing the spark, Professor Wheatstone found the series of colours and their distances from each other to be readily distinguished from the series of colours and the distance of the colours resulting from the spark produced when any other metal was used; and the same circumstances for each of the other metals which he was able to use in the fluid state were so characteristic as to afford means of distinguishing them. He also found that the light produced by the combination of each of these metals was so dissimilar from that produced from the electro-magnetic, galvanic or electric spark, that Professor Wheatstone came to the important conclusion that these sparks cannot result from the combustion of the metals, but rather from a portion of the metallic conductor carried off by the electric discharge and ignited. This communication created much interest, and Professor Wheatstone was kind enough to promise on a future occasion to exhibit these curious appearances to any members of the Association who might feel an interest in the subject; this he accordingly did on two succeeding occasions when we had the pleasure of seeing this curious phenomenon, and had an opportunity of observing how very accurately the Professor had detailed the appearances.

Mr. Fox exhibited to the section an instrument for observing the magnetic dip, variation, and intensity of force: a very light needle mounted on jewelled centres, placed in a brass box which was capable of turning in azimuth, an azimuth circle being placed beneath; also on the back of the instrument was a vertical circle, with a tube like a telescope mounted on its centre; at the top of the tube was a small achromatic lens, near the principal focus of which within the tube was placed a piece of plain glass with a small black spot in its centre. When the tube was directed to the sun, this black spot caused a very sharp annular black mark to be depicted on a white screen placed a little beyond the tube in the axis of the lens; by observing this annulus with a magnifying glass Mr. Fox stated that he could observe the most minute motion of the sun, and the instrument in this way became an instrument well fitted to observe equal altitudes of the sun or of a star; and thus the plane of the meridian of the place could be observed. The instrument being then moved into the plane of the magnetic meridian, the variation is to be read off on the azimuth circle; the dip is then had on the inner vertical circle, and, to ensure greater accuracy, is to be observed with the face of the instrument first placed east then west. To ascertain the magnetic intensity, two standard magnets inclosed in brass cylinders are placed in sockets fitted for their reception in the back of the circle at opposite sides from the centre. The alteration of the dip caused by these magnets gave, by a simple formula, a means of estimating the variation of magnetic intensity. He had tried many thousand experiments with the instrument, and had submitted it to the examination of Sir John Franklin, who had on several occasions observed with it, and the results had been most satisfactory and accordant.

Professor Stevelly inquired whether there was any provision for retaining the standard magnets of the instrument of a uniform intensity?

Mr. Fox answered, no; but any alteration was easily detected by observing the intensity at a given place.

Doctor Robinson thought that by a number of observations it might be possible to get equations from which any change in the intensity of the standard magnets might be eliminated.

Professor Stevelly replied, that even if this were possible, which he doubted, it would introduce too much complexity into observations with the instrument. And as every person conversant with magnets must be aware how subject they were to change their intensities, he thought this an objection fatal to that portion of the performance of the instrument. This, however, was of less importance, as Professor Lloyd had made public a simple and efficacious method of observing magnetic intensity with the common dipping needle, by simply causing a deflection with small bars acting by their weight.

Sir John Franklin bore strong testimony to the accuracy of the instrument in observing the dip and variation. He stated that, in the first construction of the instrument, the needle had been made too heavy, and the centres had not been made to work with sufficient freedom; that he had pointed out these defects to Mr. Fox, who had with much perseverance remedied them; that he had since made frequent trials of the instrument, and compared its indications with others which he depended implicitly upon, and had found them to agree in a very remarkable degree.

The Rev. Mr. M'Gauley now exhibited the working model of a machine for producing moving power by the application of electro-magnetic influence. The model consisted of a pendulum, the lower part of which was a magnet placed with its poles opposite to the ends of two horse-shoe bars of soft iron, round which were coiled helices of wire so arranged that by the end of the helices dipping into cups of mercury the poles of a simple galvanic battery could be alternately made to communicate with the cups in one order, and the next instant the machine reversed that order by means of a system of bent wires, caused to vibrate upon an axis, the ends of these bent wires alternately dipping into one pair of cups, and the next vibration into another; by these means the soft iron horse-shoes are at one instant a magnet with the poles in one order, the pendulum being then attracted towards both these poles, but the next instant, the poles being reversed, the pendulum is thrown forcibly back, while the opposite soft iron horse-shoe is now a magnet ready to attract it; then again it is thrown back from this second temporary magnet by the instantaneous reversing of its poles, and so on. The model worked smoothly and with a very uniform regulated motion, and appeared to be capable of working for a great length of time. Mr. M'Gauley stated that the erosion of the zinc plate was so inconsiderable, that there was hardly any limit to the length of time that the model would continue working. The acid best suited to the purpose was a mixture of one part nitric acid, two parts sulphuric, and one hundred water; he also stated that the acid in practice could be always renewed by having a constant dropping of fresh acid liquor into the trough, while a similarly gentle discharge of the spent acid from the trough could be kept up. He stated, that a numerical comparison of the economy of this mode of producing motive power with that depending upon the agency of steam, would give a vast preponderance in favour of this method, while the part of the power consumed in working the machine itself might be left entirely out of account, since the apparatus which changed the poles in his model, would equally suffice in a machine capable of working with the power of one hundred horses. In his model he only worked one of the two soft iron magnets, and its power was only that of lifting seven pounds, and yet this appeared to be sufficient to overcome all the friction, inertia, and other impediments to motion, of the several parts of the machine.

The exhibition of this model was received with sincere and reiterated applause, and many scientific men present expressed sanguine expectations of the value of the method in a practical point of view, all agreeing that it was the best attempt yet made of the many schemes that had been proposed for producing motive power by the electro-magnet.

Mr. M'Gauley then inquired of the President whether or not he thought that the time that remained for the business of the section, this day, would be sufficient to permit him to enter upon the examination which he proposed of the theory of electro-magnetism, with a view to settle the principles that would be required when entering upon the practical questions of the construction of machines on this principle, and of a comparison of their performance with other machines, such as steam-engines.

The President, speaking under the correction of the section, thought that if Mr. M'Gauley's communication was likely to be of any considerable length, it would be better to allow the remaining business to be gone through this day, and the committee could arrange a future portion of time for bringing forward Mr. M'Gauley's theoretic views.

Mr. M'Gauley stated, that, as he would require considerably more than an hour, he would take advantage of the suggestion from the chair, and defer what he had to say to another occasion.

Professor Hamilton then communicated his views respecting the science of Algebra, and in particular respecting certain quantities of a high order, the uses of which he wished briefly to advert to.

The professor began by observing that it had long been a question in what category algebra was to be placed—was it a science, an art, or merely a language? In his opinion, as it was ordinarily taught, and made the subject of investigation, it could scarcely demand any higher rank than that of a very compendious and precise language, yet he had no doubt that it might be so treated as to rank as one of our most abstract and yet practical sciences. Geometry, he conceived, might be simply viewed as the science of pure space: and algebra might be so treated as to be the science of pure time or duration. The quantities of which geometry treated were all easily conceived and readily comprehended, but many of the symbols at present used in algebra had no conceivable value or antitype existing. The conceptions of negative quantities which met us in our very first entrance upon algebra, were with great difficulty attained by ordinary learners; and the doctrine of imaginary or impossible quantities had to many persons assumed the appearance of downright inconsistencies and absurdities; these, no doubt, might be reduced to a strictly comprehensible form by the theory of couples lately advanced by Mr. Greaves, and respecting which he had had the honour of submitting some additional views to the Association and to the public; but, as he conceived, it yet remained to reduce the entire to one consistent system, and this he conceived could be done by maintaining a constant and strict reference to the times during which quantities of any kind may be considered as increasing or diminishing, as had already been done to some extent in some of the higher branches of algebra. He showed how, on this principle, the ordinary processes of addition, subtraction, multiplication and division, could be reduced to one common mode of conception, and how all the ordinary algebraic symbols of plus and minus, &c. would become parts of one harmonious system, whilst they expressed simply the increments and decrements of quantities. But he conceived that these very symbols and the same notation would thus become applicable to quantities of a much higher order than any that ordinary algebra presents to us: for instance, quantities increase or they diminish; now these increments and decrements may be viewed as in common algebra simple quantities, with positive or negative signs attached to them, or the ratios of these increments or decrements to one another, in relation to the time in which they took place, might be investigated. In this point of view, it was obvious that, besides the marks of quantity and positive or negative signs, which would belong to them as simple quantities, their ratios would then require to be expressed, first, as quantities, and then they would, when they increased the quantities to which they belonged, admit or require the positive sign; but, when their effect was to diminish, they would admit or require the negative sign. But farther, they might increase at an increasing or they might increase at a diminishing rate, or they might diminish at an increasing or diminish at a diminishing rate; this again would introduce a new distinction of sign, and so on; and thus quantities of a higher order than any as yet admitted into common algebra might be introduced and treated in a manner harmonizing with the entire system. These higher orders of numbers or quantities he would propose by an obvious adaptation of two Greek words to call Logologue, did he not fear that the oddity of the term might seem to cast an air of ridicule around what he conceived to be of very important and very general utility in the science. The learned professor intimated his intention of reducing these rough views, which he had now laid before the section, to a more systematic form, and giving them to the public when he could command sufficient leisure.

Thursday.—The first communication was a report by Mr. Bailey, of a comparison of the Aberdeen standard scale of five feet long, made by Troughton, with the standard scale of the Royal Astronomical Society. This comparison was made at the request of the British Association at its late meeting at Edinburgh, and had since then acquired an importance which had not at the time been at all anticipated, in consequence of the destruction of the parliamentary standard of these countries by the late calamitous fire in the houses of Lords and Commons. The middle of the scale of the Royal Astronomical Society had been previously compared with the imperial standard; with that part of it, therefore, alone it was determined to make the comparison with the Aberdeen scale. The report then went on to state the precautions used in order to ensure accuracy, and the result was most gratifying and satisfactory, as the very near coincidence of the results obtained by different observers most clearly evinced.

Mr. Snow Harris then gave an account of his observations upon the thermometer made at Plymouth, and taken every hour both of the night and of the day, since the first of May 1832.

Mr. Harris exhibited to the section manuscript tables containing upwards of 30,000 observations of the thermometer taken every hour night and day since May 1832. From these observations many valuable results had already been obtained; and a comparison of them, with similar observations conducted at Leith harbour, under the superintendence of Sir David Brewster, had been attended with the most gratifying comparative results. Mr. Harris explained how, by taking a mean of all the observations for each hour in succession through the twenty-four hours, and marking down these means by points on a sheet of paper, previously divided by twenty-four equidistant lines running from the top to the bottom of a large sheet to denote the successive hours of the day, and then divided across by a number of equidistant lines sufficient to denote the number of degrees upon a thermometer between the lowest and the highest mean diurnal temperature ever observed at Plymouth, by joining these points, a curve is obtained which may be called the mean diurnal curve of temperature for that place. A straight line also ran across the sheet in such a position as to denote the mean temperature of the place of observation. Mr. Harris had also been at the pains, since there was some difference between the mean diurnal curves for the winter six months beginning with November, and the summer six months beginning with May, to draw a distinct curve for each; and to show the correctness of the principle on which these curves are constructed, and the harmony that exists between these curves when representing the mean diurnal variations of the thermometer at distant places, he exhibited on the same sheet, but in a different coloured ink, the curves obtained for Leith under the superintendence of Sir David Brewster; and while the general resemblance of the curves belonging to the two places was most obvious and striking, the clear conception which almost a single glance at these curves was sufficient to give, of the diversities of the minute circumstances of the diurnal varieties at the different stations, was no less striking than interesting. To speak the language of mathematicians, the axis of the abscissæ were the successive hours of the day, and the ordinates were the mean heights and depressions of the thermometer above and below the mean temperature of the place at the

several hours represented by the abscissæ. The general results stated by Mr. Harris were these: The curve crosses the line of mean temperature at 12 minutes past 8 A.M.; it then rises up farther and farther from the line of mean temperature until about 1 P.M., when the mean diurnal maximum is attained; it then returns again, reaches and crosses the line of mean temperature, at 19 minutes past 7 P.M.; it then sinks more and more below the line of mean temperature until 5 o'clock in the morning of the succeeding day, when the mean diurnal minimum of temperature is obtained, and it then rapidly rises, until, at 12 minutes past 8 A.M., the curve again crosses the line of mean temperature, and so on, as already described, for the preceding 24 hours. The principal differences between the Leith and Plymouth curves were, as far as we could catch them: 1. The extreme variations of temperature appear to be greater than at Plymouth; 2. The mean diurnal maximum is not attained until 3 P.M.; 3. The morning mean is not obtained until after 9 o'clock A.M., nor the evening until about 8 P.M. Mr. Harris then examined the nature of the four branches of the curve, and showed, by a comparison of the ordinates and abscissæ of each, that each could be very accurately represented by a branch of a common parabola, but the four branches had obviously each a distinct parabola for its type.

Mr. Harris also exhibited to the section a table showing the deviations of the means of similar hours taken A.M. and P.M. from the mean of the entire day. The reading of this communication, and the exhibition of the curves, excited much interest in the section; and many members showed the deep interest they took in the subject, by asking several questions on points which they had not accurately understood.

Mr. Roberts, of Manchester, informed the section that there was, or is, a clock at Warsaw which registers and exhibits for public inspection the height of the thermometer at every successive minute during the entire twenty-four hours.

At the desire of the committee of this section, the committee of recommendation subsequently advised the Association to allocate a sum of money for publishing these tables and the general results obtained by Mr. Harris.

Professor Hamilton then read, and very ably commented on a communication which he had received from Mr. G. B. Jerrard relative to the grand desideratum in pure Mathematics, the finite resolution of equations of the higher orders. The solution of cubic and biquadratic equations has been known for nearly three centuries; but all attempts which have hitherto been made to proceed beyond them, have been altogether unsuccessful, although (in the words of Mr. Peacock) "this great problem has been subjected to the most scrutinizing and laborious examination by nearly all the greatest analysts who have lived in that period." The illustrious Newton failed to solve it, and was obliged to have recourse to *approximate* methods. Towards the conclusion of the last century, Lagrange attacked it with all the advantage of an improved analysis; but finding that it not only entirely eluded his grasp, but presented theoretical difficulties to all appearance insuperable, he pronounced it to be "*presqu' impossible.*" Since his time this celebrated problem has been generally regarded as incapable of solution—and, indeed, analysts of note in Italy, France and Germany, (Ruffini, Cauchy, and Abel,) have severally put forward what many have conceived to be *demonstrations* of its absolute impossibility.

Professor Hamilton first explained the methods hitherto in use for solving cubic equations rigorously, and higher equations by approximation. He then stated that it was always possible to eliminate certain terms in every equation, by introducing a new unknown quantity which should bear a known relation to the actual unknown quantity or root of the given equation. Mr. Jerrard proposed to prepare his equation for solution in this way; and then, by the introduction of certain quantities, the notation for which is of a very abstruse kind, depending upon certain quantities which mathematicians call symmetrical functions, he showed how he conceived he could arrive at the value of one of the roots; as soon as this was attained, the equation could be instantly lowered to a biquadrate, which, in certain cases, could be solved directly; but when this could not be done, a repetition of the previous general method would give a second root, and so on until the five were obtained. Professor Hamilton expressed himself in terms of high approbation at the ingenuity and entire originality of the method, although he hesitated to pronounce, as yet, a decisive opinion on a subject of such extreme difficulty; the only doubt at present on his mind was, lest the roots, when found by this method, should put on the form of cipher divided by cipher, in which case, though they would indeed be correct roots, yet their finite values could not be obtained. In the course of his masterly exposition of the theory, Professor Hamilton repeatedly expressed his admiration of the extraordinary powers manifested by Mr. Jerrard, both in the invention and in the several applications of his beautiful and comprehensive system of notation.

Dr. Jerrard, of Bristol College, returned thanks to Professor Hamilton for the very lucid manner in which he had explained his brother's views on this very abstruse subject.

[The Association (as will be seen by our former report, p. 642) subsequently voted a sum of 30*l.* to be placed at the disposal of Professor Hamilton, for the purpose of testing this solution by arithmetical calculations.]

Professor Phillips then detailed to the section the results of a third series of observations conducted at York, upon the quantity of rain received at various heights from the ground. This subject has been now so frequently before the public, and the results of this third series of observations were so entirely confirmatory of those of the two previous years, that we do not think it necessary to enlarge on it. The results were, "that the quantity of rain received at each station increases as we descend nearer to the ground, and that not from any accidental cause, but with a constancy and regularity that proclaims loudly a general principle." Professor Phillips noticed many precautions to ensure accuracy, which had been attended to this year, and which had been suggested by the experience of the former years. He particularly alluded to the effects of evaporation and condensation of dew.

After the reading of this paper an animated conversation took place, chiefly consisting of statements of facts confirmatory of the views and results of Professor Phillips.

Colonel Sykes then proceeded to describe a very simple apparatus by which he had long been in the habit of finding the heights of elevated stations by the aid of the common thermometer, on the principle first used by Wollaston, that the boiling temperature of water grows lower as you diminish the atmospheric pressure to which its surface is subjected. He stated, that every person who had ever used it knew that Wollaston's apparatus was very expensive in its first cost, and very liable to meet with accidents, and be broken from the excessive weight of its bulb. Now Colonel Sykes found, that a good common thermometer, with a moderately long scale, was quite sufficient for all ordinary practical purposes. His simple apparatus was a common tin shaving pot, and a tin cylinder which fitted its upper orifice when about one-half of its length had descended into the shaving pot; the upper part, or cover, of this cylinder was furnished with an oblong opening for receiving the thermometer, and sustaining it with its bulb in the water, which is made to boil in the shaving pot; the upper part of the scale of the thermometer being kept above the lid, so as to be readily seen; the heights are then obtained from the boiling points, by tables which are of easy access. He exhibited to the section a comparison of the heights of certain elevated stations taken by the aid of his simple apparatus, with the heights of the same stations taken by methods of admitted accuracy, and in general the difference was only a very few feet, and never so great as to be of any practical importance.

Mr. M'Cullagh then read a very able paper on the laws of the reflection and refraction of polarized light at the surfaces of crystals, of which an abstract appeared in our last paper.

Mr. M'Gauley concluded his paper upon electro-magnetism, the commencement of which he had yesterday communicated to the section along with the working model of an electro-magnetic machine for affording motive power.

This very elaborate essay occupied more than an hour and a half in the delivery, so that it would be impossible to do it anything like justice in any notice our limits would enable us to take of it. He stated the commonly-received theory, that the conducting wire which joined the poles of the galvanic battery, became the course of certain currents of electric fluid, and that this, in its transit, induced magnetic power in iron or steel placed in certain positions relative to the connecting wire. From this theory he entirely dissented, and maintained that galvanism was itself magnetism, and magnetism was galvanism, exhibiting merely a diversity of phenomena under a diversity of circumstance. He then entered at great length, by the aid of many diagrams, and much ingenious explanation, into an examination of the manner in which, according to his views, a current of electrical and magnetical particles are constantly passing; and therefore the place of each, constantly occupied, would constitute, at other positions, magnetic arrangements of considerable power.

THE LATE AERIAL VOYAGE.

To the Editor of the Athenæum.

SIR,—According to your wish I send you a few notes and particulars of my ascent with Mr. Green on Thursday evening, from Vauxhall Gardens.

The first moment, as we rose, was perhaps the most astounding of the whole: the horizon on every side started from the earth, whilst the trees and buildings which had bounded our view appeared sunk into an abyss. The gardens and their moving mass were soon but a spot in the vast scene, which was expanding farther and faster than the eye could follow. As we pierced the clouds the earth was lost; we rose from their vast folds into the brilliancy of an Italian sky. The scene was now magnificent; for a moment we could see nothing but the soft heaving mass below, and the other balloon as a dark ball rolling on before us; the sun was sinking into the strong outline of a cold grey cloud pouring forth his silver rays, which blended into gold as they swept over the vast surface of the earth. As the sky cleared, the parks and mansions, with every detail of canals, roads, fields, and bridges, the winding Thames diminished to a silver rivulet, the vast metropolis with every tower rising in miniature distinctness through the dusky air, as it caught again the broad rays of the setting sun—these together, from the mouth of the Thames to the western hills, formed a picture, which as far exceeds description as it is without comparison on earth.

The calm and death-like silence broken only for a moment as we passed into other currents, or by the distant roll of the great city, still dwelling upon the ear as it floated onward, inspired a

feeling of security and repose, which left the mind in full enjoyment of this noble scene.

The sun had set upon the lower earth, but was still shining upon us in all its brilliancy, when the breeze, which we had watched in the dizzy waving of the trees, seemed to have lulled into a calm, and to afford a favourable moment for descent. On opening the valve we sunk with great rapidity; as we approached the surface, the darkness which had seemed to cover it whilst we still floated in the sunshine, gradually disappeared, giving the singular impression of a second dawn. The crowds who were awaiting our descent were now distinctly visible; it was a fine illustration of the one step from the sublime to the ridiculous, as, from these upper scenes of grandeur and repose, the eye turned to the villages, which now poured out their motley groups, cheering and shouting, then dropping back in sulky disappointment as we skimmed far beyond them. We passed close over the outskirts of Uxbridge; it was market day, and a finer treat for Isaac Walton could not be conceived, than when our grappling hook was dropping upon the 500 open mouths of the assembled crowd. Nothing could be safer than the descent; the grappling iron dragged a few yards, then took fast hold upon a bank; the shock was first perceptible as we lay in the bottom of the car in case of a sudden jerk. The people below soon towed us gradually to the ground.

As a study for the artist, the ascent was unrivalled: as rapidly as the eye could follow, the perspective lines had undergone every change from the horizontal to the vertical parallel, whilst the horizon, still keeping on a level with the eye, gave a shock of expansive grandeur far beyond the range of art; as the linear perspective was reversed, the aerial effects became still more unearthly, the clouds, which were now the fore-ground, in the softness of their pencilling and fading colours, formed a strange contrast with the sharper tones and colouring of the distant earth. The slow revolutions of the balloon displayed the circuit of this grand scene in an unbroken series of effect: at one time, when we floated in the line of light, was seen a picture without a particle of shade excepting the flat spots thrown by an intervening cloud. The lengthening shadows, as we turned towards the sun, reached their full mass; then shortening again, they seemed to concentrate their density on the sun's disc with the sharpness of an eclipse. †

The effect of the rays, as frequently seen diverging through a cloud, was here quite reversed; instead of falling to the earth, they swept in broad horizontal bands along its surface.

The greatest altitude indicated by the barometer was a mile and three quarters; at this height the thermometer stood at 48°, in a cloud about half this altitude it had sunk to 40°, and, judging from the feelings, it would have sunk lower if we had remained in it. Within 100 feet above this cloud I lowered the etherial hygrometer nearly to the freezing point without the slightest deposition of moisture; this singular phenomenon, so entirely at variance with the received theory of clouds, I will not attempt to solve. I had wished to compare the effect of elevation upon the barometer and the sympiezometer, but not having been able to obtain the latter instrument with sufficient range, and the substitute which I had made from a turkey craw not giving a sufficiently accurate result, I can only suggest the interesting nature of these experiments with a view to ascertaining the influence of electricity, and other causes, which might also explain the striking and unconnected changes of heat and moisture in the different currents. These were much less varied than in the former ascent. I observed our course once to change about six points; but here very strongly marked. The balloon and car were acted upon for a few moments by conflicting forces, giving the sensation of a passing breeze.

We followed in the track of the other balloon, sufficiently low to distinguish every particular in its descent, and could even hear the voices in the crowd; then rose again to our greatest elevation, and remained nearly stationary. The motion, which at one time probably exceeded forty miles an hour, was almost imperceptible; it was only by watching the grappling iron, which hung 200 yards below, and gave a second point, that our progress from field to field could be observed. The only sensation which was in any way unpleasant was in descending. As the air became more dense, the ears were slightly affected, as in a diving bell; beyond this, a more gratifying trip cannot be conceived; and it is but justice to Mr. Green to speak in the highest terms of his caution and judgment.

I remain, Sir,
Your obedient servant,
1st Sept. 1835. E. V.

† This singular effect has already been noticed in Mr. Green's account, as one which he had never before witnessed to this extent. It was probably owing to the flat cirrostratus being seen transversely, whilst the extreme dryness of the air gave no refracted light.

OUR WEEKLY GOSSIP ON LITERATURE AND ART.

What are we to say of the magazines for the month?—Little that is new: they are most of them keeping "the even tenour of their way," and reserving their untold resources till the commencement of the new publishing season. *Blackwood* is pleasant this month, and gives us more and shorter articles than usual, with a sprinkling of foreign literature. The *New Monthly* has a song by Barry Cornwall, good enough to redeem the more than doubtful taste of a paper by another contributor, called the 'Noces de Nose': we cannot let its critique upon Grisi pass, without entering a gentle protest against it; the writer, too, has made a great mistake, in saying that she made her first appearance "towards the conclusion of the season of 1834," whereas she was its main dependence and chief ornament. 'The Confessions of Shakespeare' are brought to a close; and the 'Clergyman in Debt' gives us one of his melancholy experiences. *Tait* flourishes in the strength of Mary Howitt's 'Lady Magdalene': its 'West Country Exclusives' does not end as naturally as it began. *Fraser* gives us the portrait of the late Mr. Sadler, and recollections of Sir Walter Scott; he contains nothing to find fault with, but we have seen more brilliant numbers. Is the *Constitutional* projecting a union with the *Monthly?* As it stands at present, it is almost the double of that Magazine—in style of article, tone of criticism, and even down to the accessories of paper and print! The *Asiatic* and *United Service Journals* always interest us, but we have said so a score of times before. The other periodicals of the month continue "much as when we last inquired."

The fourth number of the Journal of the Royal Asiatic Society contains more valuable, and at the same time popular information, than any of the preceding. Col. Sykes's 'Essay on the Land Tenures of the Dekkan,' not only illustrates the present political condition of the Mahrattas, but throws a new and unexpected light on their ancient history. Captain Low's 'History of Tennasserim' contains a very accurate account of the provinces ceded to this country by the peace with the Burmese, provinces that are fast rising in commercial importance. Mr. Edye's description of the sea-ports on the Malabar coast, and the facilities they afford for building vessels, must be deeply interesting to the entire trading community. Capt. Swanston has concluded his memoir of the ancient Christian church of Malayala, whose miserable state will, we doubt not, attract the sympathy of the religious world. The only other paper demanding notice, is Professor Wilson's comments on Mr. Wathen's translation of some Sanscrit inscriptions, which contain useful hints to the students of Oriental history.

We are glad to see that the disposition to form literary and scientific institutions is still spreading; as we find in a prospectus before us of an establishment of this kind in the popular neighbourhood of Lambeth. It has our best wishes. While we are on the subject, we may as well mention having heard from Liverpool that the new building for the Mechanics' Institution there has been entered on with great spirit, and is likely to prove an ornament to the town. We are told, too, that the exhibitions of pictures both in that town and its rival neighbour, Manchester, are likely to be more interesting than usual.

It is stated by the correspondent of the *Times*, in a letter from Constantinople, dated 11th ult., that Capt. Chesney and the Euphrates Expedition had succeeded in reaching Bir without encountering any obstacles.

THEATRICALS

ENGLISH OPERA HOUSE.

This Evening (1st time), NO PLOT WITHOUT DANGER; with SCHOOLMASTER AT HOME; and THE COVENANTERS.
On Monday, Tuesday, and Wednesday, NO PLOT WITHOUT DANGER, with SCHOOLMASTER AT HOME, and THE OLD OAK TREE.
Thursday, A New Romantic Drama, called THE DICE OF DEATH.

HAYMARKET THEATRE.

Five-act Comedies, which used to be as "plenty as blackberries," are now "like Angels' visits." It would be well if they were as agreeable when they do come, but this unfortunately is seldom the case. Mr. Beazley, with his 'Hints for Husbands,' in five acts, produced here on Saturday last, has exerted himself to get above the line of mediocrity, and he has, to a certain extent, succeeded; but though he is sometimes above it, he is sometimes below it, and more frequently upon it than either. The plot, or rather, plots—for there are in this comic establishment of Mr. Beazley's, not only a plot and an underplot, but two assistant plots—have been supplied, it is stated, by two French dramas. This, perhaps, is an exaggeration, and the French dramas have only furnished the hints. Be it as it may, they are interwoven with no inconsiderable skill; and the dialogue being generally easy, and ever and anon more than usually smart, the play passed off, except where it dragged from its unreasonable length, to the expressed satisfaction of the audience. It may be described as being, upon the whole, a clever play of the sort. If we are asked, "Do you like the sort?" the answer is clearly "No;" and if asked "Why not?" thus it is: It is mainly an exhibition of heartlessness and vice on the part of the husbands, without any correction, and, consequently, without any deducible moral, unless their own whining promises to behave better in future, (which promises they make when they are found out, and not before,) can be called a moral. There is nothing opposed to this on the part of the *good* characters of the piece, but the sickly "*sentimentalibus lachrymarorum*" of the cocked-hat and breeches comedies of thirty years ago; and the serious part of the writing is seriously bad. There were some few flights of poetry which were so *high* as to get beyond the reach of our intellectual vision. They were like the flight and explosion of a sky-rocket, which rings through your ears, dazzles your eyes, and leaves you more in the dark than before. The acting, on all hands, was good; but admirable as to Mr. Farren, and excellent as to Miss Faucit. Her broken English, however, was not good, and this, in some degree, marred the effect of an otherwise very clever performance. We recommend about nineteen-twentieths of the part assigned to poor Mr. Haines being cut out.

Sentimentality fits Mr. Beazley like a sack, and his comical head is peeping out at the top of it all the time, as if to get breath. The prologue we did not hear, but it is well spoken of; the epilogue is written with considerable neatness and point, and was well delivered by Miss Taylor. In it the author threatens to follow up this play with another, to be called 'Hints for Wives.' It is to be hoped that he does not mean merely to turn this inside out, and give us a row of naughty wives with sentimental husbands. We have pointed out the faults of this play, because it is our duty to do so; but it is, nevertheless, a work of much ingenuity, and it was very well received by the audience, and very generally applauded.

MISCELLANEA

Oriental Traveller.—At the sitting of the French Academy on the 27th of July, M. Raoul Rochette presented M. Martin Honigberg, who has been travelling in Asia for twenty years, and who was four years in the service of Runjeet Sing. He has brought with him, from these countries, a multitude of curious and interesting objects, some of which he has communicated to the Académie des Inscriptions; and the Académie des Sciences will be allowed to inspect the Flora of Himalaya, and all that pertains to Natural History. M. Honigberg is a native of Austria, and, as we mentioned some time since, is now in England, and, having witnessed the different methods of treating the cholera during his medical practice, may be able to afford some useful hints to European practitioners. We understand that he has already communicated on this subject with the Academy of Medicine in Paris.

Baron Cuvier.—The municipal council of Montbeliard having announced to the Paris Institute that the inauguration of the statue of the immortal Cuvier would take place in his native town on the 23rd of August, the anniversary of his birth, the Academy of Sciences, and the Académie Française each sent three members to assist at the ceremony. One of the Professors of the Jardin du Roi accompanied these gentlemen for the same purpose.

M. Merimé.—We with pleasure see a new work advertised from the pen of M. Prosper Merimé. He holds the office of Inspector of Historical Monuments under the existing government of France, and his publication consists of the notes made by him during one of his professional excursions in the South of France. It is likely to be a highly amusing publication, and doubtless instructive as to its primary object.

List of New Books.—Family Library, Vol. LXIII. (Life of Washington, Vol. I.) fc. 5*s.*—Parent's Cabinet, Vol. VI. 18mo. 3*s.* 6*d.*—Sacred Classics, Vol. XXI. (Sacred Poets of the 17th Century,) fc. 3*s.* 6*d.*—Zing's Memoirs of the Rev. G. F. Bedell, D.D. by the Rev. T. Snow, B.A. post 8vo. 7*s.* 6*d.*—Memoirs of the Rev. Cornelius Neale, M.A. by the Rev. W. Jowitt, 2nd edit. post 8vo. 8*s.* 6*d.*—The Songs of La Colonna, fc. 10*s.* 6*d.*—Lardner's First Principles of Arithmetic and Geometry, fc. 5*s.*—Lardner's Cabinet Cyclopædia, Vol. LXXX, (Arts of the Greeks and Romans, Vol. II.) fc. 6*s.*—Combe on the Constitution of Man, 3rd edit. post 8vo. 4*s.*—Grimshawe's Cowper, Vol. VIII. fc. 5*s.*—Concordance to the New Testament, 32mo. 2*s.* swd, 2*s.* 6*d.* cloth.—Simple Truths in Verse, 18mo. 1*s.* 6*d.*—A Treatise on Hydrocephalus; or Water in the Brain, by W. Griffiths, 12mo. 3*s.* 6*d.*—Boyhood; with other Poems and Translations, by C. A. Elton, 8vo. 12*s.*—The Life of Admiral Viscount Exmouth, by Edward Osler, Esq. 8vo. 14*s.*—Tales that might be true, 18mo. 2*s.* 6*d.*—Sabbath Recreations, by Emily Taylor, 3rd edit. 18mo. 5*s.*—Some Account of the Writings and Opinions of Clement of Alexandria, by John, Bishop of Lincoln, 8vo. 12*s.*—Sermons, Doctrinal and Practical, preached Abroad, by the Rev. R. W. Jelf, B.D. 8vo. 9*s.* 6*d.*—Eternal Life; the Revelation of the Book of Moses, by the Rev. J. Ellice, M.A. 12mo. 4*s.* 6*d.*—De Morgan's Algebra, royal 12mo. 9*s.*—Meditations and Addresses on Prayer, by the Rev. Hugh White, 2nd edit. 12mo. 5*s.*—Encyclopædia Britannica, new edit. 4to. Vol. XI. Part II. 18*s.*—Graphics, a Manual of Drawing and Writing, by R. Peale, 12mo. 2*s.* 6*d.*—Edwards's Introduction to English Composition, 12mo. 2*s.* 6*d.*—Lawson's Military Pastor, fc. 5*s.* 6*d.*—Hildyard's Manual of Ancient Geography, 12mo. 2*s.* 6*d.*

TO CORRESPONDENTS.

H. L. M.—N. L. T.—Homunculus.—F. L.—R. H.—A Musical Amateur—received.

We are obliged to "A Pastor," but can neither avail ourselves of his intended kindness, nor, we fear, comply with his request.—Also to R. K. The substance of Dr. Iken's communication, appeared a month since in the daily papers.

Ignotus should have sent us his name in confidence. Not having done so, we were compelled to verify his former statement, and must have done so again, before we could have inserted his letter. This has been hitherto impossible, and the time for publication is now gone by.

METEOROLOGICAL JOURNAL FOR AUGUST.

KEPT BY THE ASSISTANT SECRETARY AT THE APARTMENTS OF

THE ROYAL SOCIETY, BY ORDER OF THE PRESIDENT AND COUNCIL.

1835.	9 o'clock, A.M.		3 o'clock, P.M.		Dew Point at 9 A.M. in degrees of Fahr.	External Thermometer. Fahrenheit.		Self-registering.		Rain in inches. Read off at 9 A.M.	Direction of the Wind at 9 A.M.	REMARKS.
	Barom.	Attach. Therm.	Barom.	Attach. Therm.		9 A.M.	3 P.M.	Lowest.	Highest.			
S 1	30.162	75.2	30.083	74.9	57	67.9	75.6	57.8	75.8		SW	A.M. Fine and cloudless—light haze. P.M. Hazy. Evening, Cloudy.
⊙ 2	30.010	72.6	29.972	75.0	62	67.2	70.8	60.9	73.6		E	A.M. Cloudy—light wind. P.M. Fine—light clouds and wind.
M 3	30.055	69.0	30.045	72.3	56	64.8	68.4	57.9	70.6		E	A.M. Cloudy—light brisk wind. P.M. Fine—light clouds and wind.
T 4	30.035	71.6	30.000	72.2	56	65.7	72.6	53.0	75.7		NE	Fine—nearly cloudless—light wind. Evening, Fine and clear.
W 5	30.053	72.0	30.002	73.4	58	68.4	76.0	56.3	78.6		SW	A.M. Fine and cloudless—light haze. P.M. Lightly cloudy.
T 6	30.049	72.4	30.055	74.7	63	69.6	74.5	64.0	75.7		SW	A.M. Cloudy—light wind. P.M. Fine—light clouds and wind.
F 7	30.004	70.7	29.994	73.7	65	67.4	67.7	64.2	72.6		SSW	A.M. Lightly overcast—very light rain. P.M. Overcast—light continued rain. Evening, Fine and clear.
○S 8	30.281	70.5	30.280	71.0	52	61.2	70.2	51.9	70.2	.044	SW	Fine and cloudless—light wind.
⊙ 9	30.380	70.7	30.338	70.5	56	62.7	73.3	52.0	73.6		W	Fine and cloudless.
M 10	30.348	73.6	30.269	73.2	56	71.3	78.9	58.8	80.2		S	Fine and cloudless.
T 11	30.128	73.7	30.002	76.3	62	75.3	82.7	63.0	84.4		ESE	Fine—light clouds—light brisk wind.
W 12	29.954	74.6	29.958	76.6	63	69.8	78.4	61.2	79.7		SW	A.M. Cloudy. P.M. Fine—light clouds. Evening, Cloudy.
T 13	30.105	72.2	30.097	74.0	54	65.3	70.8	59.6	72.4		S	Cloudy—light brisk wind.
F 14	30.241	70.0	30.216	72.6	54	63.9	69.7	55.4	70.6		N	Cloudy—light wind.
S 15	30.198	70.0	30.156	72.4	57	63.6	74.5	57.4	75.5		E	A.M. Thick haze. P.M. Fine—light clouds. Evening, Cloudy.
⊙16	30.188	71.9	30.174	73.6	60	68.3	76.4	62.5	76.2		SW	Lightly overcast. Evening, Cloudy.
M 17	30.267	71.3	30.283	74.3	66	69.8	72.4	65.7	73.8		N	A.M. Overcast. P.M. Fine—light clouds. Evening, Cloudy.
T 18	30.299	70.9	30.250	73.6	60	67.7	72.5	59.9	73.6		E	Fine—light clouds and wind. Evening, Fine and clear.
W 19	30.233	70.7	30.150	73.7	64	67.8	76.3	59.2	76.6		E	Fine—nearly cloudless—light wind. Evening, Fine and clear.
T 20	29.956	72.7	29.815	74.9	65	70.2	75.8	61.5	76.8		E	Fine and cloudless—light haze and wind. Evening, Fine & clear.
F 21	29.659	73.2	29.566	76.0	63	71.0	79.3	61.4	80.6		SE	Fine—light clouds and wind. Evening, Overcast—very light rain.
S 22	29.602	74.3	29.637	75.6	64	70.2	72.7	63.8	74.4		S	Fine—light clouds and wind.
⊙23	29.771	74.3	29.780	74.4	59	67.4	72.7	58.2	73.2		SSW	A.M. Fine—light clouds and wind. P.M. Fine—light clouds and very light rain. Evening, Overcast.
●M 24	29.594	68.9	29.562	73.2	62	65.3	70.4	61.4	71.6	.038	SE var.	A.M. Lightly overcast—light wind—rain early. P.M. Fine—light clouds and rain. Evening, Cloudy.
T 25	29.600	68.7	29.602	71.6	61	63.2	68.8	58.0	71.2	.086	SW	A.M. Overcast—light wind. P.M. Lightly overcast—light shower. Evening, Overcast—light rain.
W 26	29.679	64.8	29.695	68.0	55	57.3	63.3	55.8	64.4	.152	WSW	A.M. Overcast—very light rain & wind. P.M. Cldy.—light rain.
T 27	29.754	63.3	29.812	68.0	55	57.2	65.3	53.0	68.0		W	A.M. Overcast. P.M. Fine—light clouds and wind. Evening, Fine and clear.
F 28	30.010	65.9	30.027	68.9	60	64.8	68.2	56.8	69.4		N	A.M. Cloudy. P.M. Fine—light clds. & wind. Evening, Cloudy.
S 29	30.069	65.0	30.033	68.3	56	62.7	68.2	53.4	70.6		E	Fine—light clouds and wind. Evening, Cloudy.
⊙30	30.053	66.2	30.043	68.3	57	60.4	69.6	53.3	70.7		NE	A.M. Foggy. P.M. Fine—light clouds and wind. Evening, Cloudy.
M 31	30.099	65.7	30.057	67.2	53	60.2	66.9	51.8	67.7		N	Fine and cloudless—light haze and wind. Evening, Cloudy.
MEANS ..	30.027	70.5	29.998	72.7	59.1	66.1	72.4	58.4	73.8	Sum. .320	Mean of Barometer, corrected for Capillarity and reduced to 32° Fahr. ..: ..	9 A.M. 29.916 — 3 P.M. 29.883

. Height of Cistern of Barometer above a bench-mark on Waterloo Bridge=83 feet 2½ in.—Ditto, above the presumed mean level of the Sea=95 feet.—External Thermom. is 2 ft. higher than Barom. Cistern.—Height of Receiver of Rain Gauge above the Court of Somerset House=79 feet.

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